AINSWORTH UNIT (NEBRASKA) MISSOURI RIVER BASIN PROJECT

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MAIN
READING ROOM

HEARING

BEFORE THE

SUBCOMMITTEE ON IRRIGATION AND RECLAMATION

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS UNITED STATES SENATE

EIGHTY-FOURTH CONGRESS

SECOND SESSION

ON

S. 2206

TO PROVIDE FOR THE CONSTRUCTION AND OPERATION BY THE SECRETARY OF THE INTERIOR OF THE AINSWORTH UNIT OF THE MISSOURI RIVER BASIN PROJECT

JUNE 17, 1955

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CONTENTS

Text of: Page
Public Law 612, 83d Congress 2
S. 2206 2
Statements of—
Burdick, Clyde E., area development engineer, Bureau of Reclamation 5, 32
Dexheimer, W. A., Commissioner of Reclamation, Department of the Interior, Washington, D. C 2
Heth, Lynn, E., attorney at law, Valentine, Nebr 32
Karabatsos, Kimon T., executive secretary, Nebraska River Basin Development Association of Ainsworth, Nebr 20
Lineweaver, Goodrich W., committee assistant for reclamation 4
Smith, William C., Jr 9

SUPPLEMENTAL MATERIAL ON PROJECT PLANNING REPORT

Letters of—
Department of Interior to President of Senate 57
Bureau of the Budget to Secretary of Interior 58
Department of the Interior to the President 59
Bureau of Reclamation to Secretary of Interior 60, 61
Department of the Army to Bureau of Reclamation 63
Department of Agriculture 63
Department of Commerce to Bureau of Reclamation 65
Department of Health, Education, and Welfare 65
Federal Power Commission to Department of the Interior 68
Department of Labor to Bureau of Reclamation 69
Governor of Colorado to Department of the Interior 69
Governor of Kansas to Bureau of Reclamation 70
Governor of Montana to Department of the Interior 70
Governor of Nebraska to Department of the Interior 71
Former Governor of Nebraska 71
Governor of South Dakota to Bureau of Reclamation 73
Governor of Wyoming to Department of the Interior 73
State engineer of Wyoming to Bureau of Reclamation 73
Bureau of the Budget, August 22, 1955 74

AINSWORTH UNIT (NEBRASKA) MISSOURI RIVER BASIN PROJECT

FRIDAY, JUNE 17, 1955

UNITED STATES SENATE,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to call, at 3:30 p. m., in room 224, Senate Office Building, Hon. Eugene D. Millikin presiding.

Present: Senator Millikin, presiding.

Present also: Goodrich W. Lineweaver, reclamation assistant; Elmer K. Nelson, and Platt Wilson, professional staff members; and N. D. McSherry assistant chief clerk.

Senator MILLIKIN. The committee will come to order.

The hearing this afternoon is called to give Nebraska witnesses who are in town for a House hearing an opportunity to present their views on S. 2206, to provide for the construction and operation by the Secretary of the Interior of the Ainsworth unit of the Missouri River Basin project, which I had the honor with Senator O'Mahoney of sponsoring for authorization in 1944 as an amendment to the Flood Control Act of that year.

S. 2206 was introduced by Senator Hruska and the hearing this afternoon is at his request and I am pleased to break into my own heavy schedule to accommodate as many Nebraskans as possible in the limited time available; perhaps an hour unless we are called to the Senate floor.

Senator Anderson, Chairman of this subcommittee, is out of the city and he asked Senator O'Mahoney to preside at this hearing. Senator O'Mahoney has been detained and has asked that I preside.

S. 2206 follows Public Law 612 of the 83d Congress which authorized the Ainsworth, Lavaca Flats, Mirage Flats extension and O'Neill units. It provided that construction—

> shall not be undertaken until a report demonstrating their physical and financial feasibility has been completed, reviewed by the affected States and approved by the Congress.

S. 2206 is concerned only with the Ainsworth unit on which the Department of the Interior has submitted a report. We have an interim report from the Department of the Interior on the House companion bill H. R. 5749.

Since only an hour is available this afternoon, I suggest that the time be divided equally between proponents and opponents from out of town. Except for a brief statement by Commissioner Dexheimer, Department witnesses can be heard later if necessary to supplement their testimony before the House committee. The transcript of the

House hearings today and tomorrow will be made a part of the hearings before this subcommittee by reference. It is suggested that witnesses brief their statements and file detailed testimony for the record here.

I will place copies of Public Law 612 and S. 2206 in the record as follows:

PUBLIC LAW 612—83D CONGRESS

CHAPTER 781—2D SESSION

H. R. 8520

AN ACT To provide for the inclusion of the Ainsworth, Lavaca Flats, Mirage Flats Extension, and O'Neill irrigation developments in the Missouri River Basin Project

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Missouri River Basin project, heretofore authorized by section 9 of the Act of December 22, 1944 (58 Stat. 887, 891), and section 18 of the Act of July 24, 1946 (60 Stat. 641, 653), is hereby reauthorized and extended to include the Ainsworth, Lavaca Flats, Mirage Flats Extension, and O'Neill units. The Secretary shall cause these units of the Missouri River Basin project to be coordinated and integrated, physically and financially, with the other Federal works constructed or authorized to be constructed under the comprehensive plans approved by section 9 of the Act of December 22, 1944, as amended and supplemented.

SEC. 2. Construction of the units herein authorized to be included in the Missouri River Basin plan shall not be undertaken until a report demonstrating their physical and economic feasibility has been completed, reviewed by the affected States, and approved by the Congress.

Approved August 21, 1954.

[S. 2206, 84th Cong., 1st sess.]

A BILL To provide for the construction and operation by the Secretary of the Interior of the Ainsworth unit of the Missouri River Basin project

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the report approved by the Commissioner of Reclamation on March 15, 1955, demonstrating the physical and economic feasibility of the Ainsworth unit of the Missouri River Basin project, integrated as a part of said project by the Act of August 21, 1954 (68 Stat. 757), is hereby approved and construction and operation by the Secretary of the Interior may be undertaken substantially in accordance with the comprehensive plans approved by section 9 of the Act of December 22, 1944, as amended and supplemented, and the aforesaid definite plan report.

Senator MILLIKIN. Mr. Commissioner, you may proceed.

STATEMENT OF W. A. DEXHEIMER, COMMISSIONER, BUREAU OF RECLAMATION

Mr. DEXHEIMER. Mr. Chairman, and members of the committee, I am glad to have this opportunity to discuss with you the proposed Ainsworth unit, Missouri River Basin project. Unforunately we do not yet have a final report to submit to you, but the field studies are completed, a proposed report has been prepared, and we believe the physical plan is now firm. Mr. Clyde E. Burdick, area development engineer of Ainsworth, Nebr., is here with me today to present the plan and to answer any questions the members of the committee may wish to ask.

The Ainsworth unit is located in north-central Nebraska in the Niobrara River Basin. The Niobrara River traverses northern Nebraska from west to east and lies approximately in the geographic

center of the Missouri River Basin. In the original report on the Missouri River Basin (S. Doc. 191, 78th Cong.), no units were identified for development in the Niobrara River Basin.

A comprehensive investigation of the land and water resources of the Niobrara Basin culminated in 1953 in congressional authorization of four irrigation units; namely, Mirage Flats extension, Lavaca Flats, O'Neill, and Ainsworth. Public Law 612 of the 83d Congress authorized these four units as part of the Missouri River Basin project and included the following proviso:

> Construction of the units herein authorized to be included in the Missouri River Basin plan shall not be undertaken until a report demonstrating their physical and economic feasibility has been completed and reviewed by the affected States and approved by the Congress.

The field report on the Ainsworth unit has now been completed and has been forwarded to the affected States and interested Government agencies by the Secretary of the Interior for review.

Senator MILLIKIN. Have we heard from the States?

Mr. DEXHEIMER. No, sir. That was just sent out within the last few days, although there are positive indications that the State of Nebraska, the only one affected in this case, from the Governor of Nebraska, will heartily endorse the project, and I do not believe that there should be any adverse comments from any other source.

Senator MILLIKIN. Where does the river get into the Missouri?

Mr. DEXHEIMER. The Snake River is a tributary of the Niobrara and the Niobrara goes into the Missouri at Niobrara, near the State line of South Dakota and Nebraska.

Senator MILLIKIN. What other States would be interested?

Mr. DEXHEIMER. The only interest the other States would have, I think, would be those in the Missouri River Basin which would be interested in developments which are partially financed by power revenues from the Missouri River Basin projects. I do not believe they would have any interest in the waters in this project. The actual headwaters of the Snake are in Wyoming, but there is such a small distance and small watershed in Wyoming that I do not believe they would have any active interest.

Senator MILLIKIN. Can you tell me when is the due date to hear from the States?

Mr. DEXHEIMER. Ninety days from, I believe, June 14, would be the limitation. We may hear before that time.

The unit will consist of the Merritt dam and reservoir, the Ainsworth Canal, and various distribution and dainage works to provide service for about 35,000 acres of irrigable land. The reservoir site is on the Snake River, a tributary of the Niobrara River, in Cherry County, Nebr., about 25 miles southwest of the city of Valentine. The maximum controlled storage capacity of the reservoir will be 68,600 acre-feet.

Ainsworth Canal will originate at Merritt Dam and will flow generally eastward about 53 miles to the project lands in the vicinity of Johnstown, Nebr. Project soils are fertile, well-drained, and are adaptable to sustained irrigation. The water supply from Merritt Reservoir is adequate and its quality is good.

The estimated cost of the Ainsworth Unit, based on prices prevailing in July 1954, is $25,934,000. Economic justification for the unit is demonstrated by the benefit-cost ratio which is 2.16 to 1.

As the returns from the irrigation district will not retire the entire cost allocated to irrigation, the needed financial assistance will be furnished from other revenues of the Missouri River Basin project. The actual repayment and financial assistance will depend upon the contract with the irrigation district which is yet to be negotiated. Our analyses of the Missouri River Basin project indicate that basinwide net revenues will be adequate to pay all reimbursable costs, including those of the Ainsworth Unit in a period of time well within the useful life of the works.

This is one of the more favorable irrigation units of the Missouri River Basin project, and one which is sorely needed and enthusiastically supported by the local interests. Although there are a few problems and policy questions yet to be settled, we are convinced that the Ainsworth Unit will be found a worthy feature of the overall project.

Senator MILLIKIN. When do you expect to have the irrigation district formed?

Mr. DEXHEIMER. It is formed.

Senator MILLIKIN. When do they expect to approve the plan? When do they expect to bond themselves to pay the price?

Mr. DEXHEIMER. We would have to negotiate with the district a repayment contract. Then, of course, that is subject to confirmation by the courts of Nebraska in accordance with the State law.

Senator MILLIKIN. What was that benefit factor?

Mr. DEXHEIMER. 2.16 to 1 with the overall benefits.

Senator MILLIKIN. Is there any objection to the project from anybody?

Mr. DEXHEIMER. The only objection we know of is on the part of a few landowners whose land would be cut by the main canal and their lands are subject to right-of-way, and for irrigation works, under Federal laws, and unless there was some special provision made they could not be compensated adequately for the loss of their land and the separation of parts of their farm, so that I believe if that were properly taken care of there would be no other opposition.

Senator MILLIKIN. Have you any suggested questions for the Commissioner?

Mr. LINEWEAVER. No, sir. I would say this, Mr. Chairman: After hearing these gentlemen the plan is to incorporate the House hearings, which will be much more lengthy than these, by reference in our report and proceedings over here. Then after that is reviewed if the committee decides that it wants additional witnesses from the departments they will be at hand. We could get Mr. Burdick in here, but I doubt if we will need any additional information. It will be up to the committees of both the House and Senate to decide whether they want to proceed pending the receipt of information from the affected States. Last year's law requires only that it be reviewed by the States. What that would be interpreted as being, that bridge has not been crossed.

Senator MILLIKIN. Have you finished, Commissioner?

Mr. DEXHEIMER. Yes, sir.

Senator MILLIKIN. Thank you very much.

Mr. Burdick, we will be glad to hear from you.

STATEMENT OF CLYDE E. BURDICK, AREA DEVELOPMENT ENGINEER, BUREAU OF RECLAMATION

Mr. BURDICK. The proposed Ainsworth unit is located in north central Nebraska, in the Niobrara River Basin. Although the unit will be essentially a single-purpose irrigation development, benefits will also accrue for recreation, fish and wildlife, and for pollution abatement.

The Ainsworth unit was authorized as an integral part of the Missouri River Basin project on August 21, 1954, by Public Law 621, 83d Congress, 2d session (68 Stat. 757). A field report appraising the engineering and economic feasibility of the unit has been completed in compliance with section 2 of that law, which provides that construction of the Ainsworth unit should not be undertaken until a report demonstrating its physical and economic feasibility has been completed, reviewed by the affected States, and approved by the Congress.

PLAN OF DEVELOPMENT

The principal features of the Ainsworth unit will be Merritt Dam and Reservoir, the Ainsworth Canal, three small pumping plants, and necessary laterals and drains to serve 33,960 acres of irrigable land.

The Merritt Dam will be on the Snake River about 14 river miles upstream from the confluence of the Snake and Niobrara Rivers. The dam will be rolled earth-fill and will create a reservoir having a water surface area of 2,970 acres at maximum water elevation. The total reservoir storage capacity will be 68,600 acre-feet, of which 67,500 acre-feet will be irrigation capacity and 1,100 will be dead storage. About 7,000 acres of land for the dam and reservoir will be acquired in fee title and easements will be required for some 880 acres for borrow areas. Approximately 880 acres in the reservoir area will be withdrawn from the Nebraska National Forest.

The Ainsworth Canal will deliver storage water from Merritt Reservoir to the lateral system serving the Ainsworth unit lands. It will originate at Merritt Dam and meander eastward for 53 miles. About 44 miles of the canal will be lined with concrete to prevent seepage. The canal will be fenced and excavated slopes will be seeded to provide a sod cover for erosion control. About 90 percent of the 640 acres of land required for the canal will be subject to provisions of the Canal Act of 1890 which reserves to the Government easement and rights-of-way for such a purpose.

About 209 miles of laterals and 3 pumping plants located along the laterals will be constructed to serve the irrigable lands. Electric energy for two pumps will be obtained from a local REA. The third pump will require construction of 1 mile of transmission line to obtain Missouri River Basin project energy.

The estimated total construction cost for the Ainsworth unit is $25,934,000 based on prices as of July 1954. Principal features and their estimated costs are as follows:

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Merritt Dam and Reservoir	$5,349,200
Main canal	14,035,000
Pumping plants, lines, etc	94,700
Laterals	5,655,300
Surface drains	440,000
Subsurface drains	159,000
General property	176,000
Subtotal	25,909,200
Fish-wildlife expenditures	10,000
Recreation expenditures	14,800
Total cost	25,934,000

IRRIGABLE LANDS

The irrigable lands in the vicinity of Ainsworth, Nebr., extend 22 miles from west to east and 14 miles from north to south at their widest extremity. The soils in the unit are inherently fertile and lie on sands and gravel which will provide excellent drainage. They have a high water-holding capacity, are free from harmful salt and alkali accumulations, and are capable of producing sustained high yields of a wide range of crops. The surface relief is favorable for irrigation, ranging from nearly level to moderately undulating. The general slope is about 10 feet to the mile. Detailed land classification of the 33,960 acres of irrigable lands in the unit show 12,635 acres to be class 1; 10,652 to be class 2; 9,253 to be class 3; and 1,420 as class 4h. The last classification of lands will be supplied gravity water by low-lift privately owned pumps at project-constructed laterals. As this group of lands consists of widely separated small irrigable tracts, it is proposed that the landowners install their own pumps. The Federal investment to service the private pump lands will consist principally of turnouts, sumps, and measuring devices.

HYDROLOGY

The average annual historic flow of the Snake River at the Merritt Dam site is 192,300 acre-feet. Average annual irrigation diversion of 91,500 acre-feet and reservoir evaporation of 5,400 acre-feet would leave a residual flow in the river of 95,400 acre-feet annually. A 25-year operation study for the period 1928 through 1952 indicates an irrigation shortage of only 4 percent of consumptive use requirements for only 1 year. There is no question, therefore, as to the adequacy for the water supply for the unit. The quality of the water is satisfactory for irrigation.

About 12,000 acre-feet of sediment will be deposited in the Merritt Reservoir during a 100-year period. Floods have not been a major hazard on the Snake River. In cooperative studies, the Corps of Engineers has determined that flood-control benefits would be negligible and, therefore, no firm flood-control storage will be provided in Merritt Reservoir.

Inasmuch as the Snake River originates and terminates entirely within the State of Nebraska, no upstream interstate or compact complications are foreseeable. The only active water rights that will be infringed by the Ainsworth unit are power rights at the Spencer and Niobrara hydroelectric plants of the Consumers Public Power Co.

in Nebraska. The interference will be relatively small. Construction cost estimates include a sum for the subordination of these rights.

AGRICULTURE

Livestock-general crop farming predominates on the present dry land farms in the unit. About three-fourths of the farm receipts are received from the sale of livestock and livestock products. Corn, small grains, and alfalfa are principal crops. A shift in the cropping pattern is anticipated with irrigation. Corn will remain the most important feed grain crop and will utilize about 30 percent of the irrigable land. Alfalfa will increase in importance and some high cash value specialty crops will be grown. Small grains such as oats and barley will continue to be grown to some extent. It is expected that livestock will be a substantial enterprise on most irrigated farms.

Analysis has been made of the ownerships and size of farms in the irrigable area. Less than 20 ownerships comprising about 25 percent of the acreage in the unit is in large size farms which would be subject to the application of reclamation law which limits the delivery of water to a maximum of 160 acres of irrigable land in a single ownership. No insurmountable difficulties are anticipated in connection with the disposition of excess land holdings. Numerous readjustments of ownerships and farm unit boundaries abetted by the application of economic forces can be anticipated. It is estimated that ultimately there will be over 300 farm operating units under full irrigation in the Ainsworth unit as compared with about 170 operating farm units at the present time.

ECONOMIC AND FINANCIAL ANALYSIS

Benefit-cost analysis: Total annual irrigation benefits are computed at $1,745,300. This sum includes direct farm benefits representing increased net farm income due to irrigation of $688,500 annually. Indirect benefits representing income from the sale and processing of the increased farm production and from increased farm purchases; and public benefits representing values attributable to settlement and investment opportunities, enhancement of community facilities, and stabilization of the economy in the area are estimated to be $1,056,800 annually.

The Fish and Wildlife Service and the National Park Service have estimated benefits accruing to fish and wildlife and recreation at $14,600 and $4,600, respectively. Also, the Public Health Service has evaluated a benefit of $300 annually for pollution abatement which would arise as a result of increased flows in Bone Creek.

Addition of an allowance for interest during construction and an economic cost for pumping power obtained from the Missouri River Basin project to the estimated construction cost of $25,934,000 represents a total investment cost in the Ainsworth unit of $27,007,000.

The annual equivalent costs of this investment during a period of useful life of 100 years at 2½ percent interest is $737,600. Annual costs for operation, maintenance, and replacement amount to $79,600.

As shown in the following table, the benefit-cost ratio for the Ainsworth unit is 2.16 to 1.00. It is significant that with the use of direct benefits only, the ratio would be nearly unity, or 0.87 to 1.00. There-

fore only a small portion of indirect benefits are required to supplement the direct benefits.

Public investment:	
Total construction cost	$25,934,000
Interest during construction	964,000
Economic cost of pumping power	109,000
Total investment cost	27,007,000
Annual costs:	
Average annual equivalent investment	737,600
Annual operation, maintenance, and replacement:	
Irrigation	78,100
Recreation	1,500
Total annual cost	817,200
Annual benefits:	
Direct:	
Irrigation	688,500
Other	19,500
Total direct benefits	708,000
Indirect and public (irrigation)	1,056,800
Total benefits	1,764,800
Benefit-cost ratios:	
With total benefits, 2.16 to 1.00	
With direct benefits only, 0.87 to 1.00	

ALLOCATION OF COSTS

The construction costs of the Ainsworth unit have been allocated to irrigation, fish and wildlife, and recreation according to methods prescribed by recent interagency agreement on cost allocation. Only specific costs of facilities for recreation, however, have been assigned to that function. The estimated annual operation, maintenance, and replacement expenses of the unit are considered to be entirely an irrigation cost. In addition to such irrigation costs, however, the National Park Service has estimated that $1,500 annually would be required for operation, maintenance, and replacement of specific recreation facilities.

The allocation of the construction cost is as follows:

Irrigation, reimbursable	$25,433,100
Fish-wildlife, nonreimbursable	486,100
Recreation, nonreimbursable	14,800
Total construction cost	25,934,000

REIMBURSEMENT

Owners of irrigable land have organized the Ainsworth Irrigation District which was officially approved on August 10, 1953. The district has informed the Buraeu of Reclamation of its desire to negotiate a repayment contract. The average annual payment capacity of all classes of irrigable lands as determined by field studies is $8.35 an acre. Annual operation, maintenance, and replacement expenses of irrigation facilities is estimated at $2.30 an acre. The average annual amortization payment capacity is thus $6.05 an acre, or $205,400 for the unit. The actual amount of repayment for the irirgation district

will depend upon contract negotiations up to the limit of the water users' payment capacity.

The unit report proposes that the limits for negotiations of a repayment contract range between 85 percent and 100 percent of payment capacity. The use of 85 percent of payment capacity would leave an average residual with the irrigators of about $1.25 an acre for incentive and contingencies.

It is anticipated that the repayment contract would be negotiated under the authority and provisions of the Reclamation Project Act of 1939. A 5-year irrigation development period is proposed. Repayment would retire $7,997,000 of construction costs if 100 percent of payment capacity is utilized and $6,513,000 if 85 percent of payment capacity is used. These amounts would accrue over a 40-year period for repayment for the cost of distribution works and 35 annual payments on the cost of water supply works as described in the unit report. Inasmuch as the anticipated returns from the irrigation district will not retire the entire cost of construction allocated to irrigation, assistance would be required from surplus power revenues of the Missouri River Basin project. Payout analysis of the Missouri River Basin project as a whole discloses that there are sufficient basinwide net revenues to pay all reimbursable costs, including those of the Ainsworth unit, in a period of time well within the useful life of the works.

Senator MILLIKIN. Thank you, Mr. Burdick?

Who is the next witness?

Mr. LINEWEAVER. Mr. W. C. Smith, Jr., of Ainsworth.

Senator MILLIKIN. Proceed, please.

STATEMENT OF WILLIAM C. SMITH, JR., ATTORNEY AT LAW, AINSWORTH, NEBR., REPRESENTING AINSWORTH IRRIGATION DISTRICT

Mr. SMITH. Thank you.

My name is William C. Smith, Jr. I am an attorney. I have my offices at Ainsworth, Nebr. I am now and have been since the organization of the Ainsworth Irrigation District the attorney for this district and I speak principally on behalf of the district and the people surrounding the district who are interested in this project.

Let me state here that the people in the district are very interested and 70 percent of the people who live within the boundary signed a petition asking the county commissioners to hold hearings as to whether an irrigation district would be formed. We have 267 owners in the area. We have 33,900 acres proposed for irrigation. The board of county commissioners held a hearing. They published notices, held their hearing, and called for an election; 248 votes were cast at that election and there are only 267 owners, so we had a very good turnout at the polls and it carried by a little over 80 percent, so the district was formed.

The board of directors—and this was in August of 1953—have been working closely with the Bureau and have studied repayment contracts and passed a resolution which was forwarded to the Department, stating that they in substance had arrived at the form of the contract and were ready to enter into a repayment contract at the Bureau's desire.

As I understand this hearing today, it primarily covers the physical and economic feasibility, and as a witness I do not want to go into those things as they can be covered by the Bureau much better than myself.

I do not pretend to be an expert, but I can speak as to the urgent need that we have for the water and what we can do with it if we can have this project.

Our former Governor, Val Peterson, of the State of Nebraska, held hearings throughout this valley back in 1953. Those hearings were well attended by people. In fact, in Ainsworth there were 312 people attending and there were petitions presented to the Governor throughout that valley of over 3,000 signatures asking for development of the Valley.

Senator MILLIKIN. What year was that?

Mr. SMITH. 1953 the first hearings were held. Then in December of 1954, Governor Crosby held a hearing in Lincoln—he was our then Governor—and at that time he reported to the Bureau of Reclamation favorably upon the development of this project. He said it was a very desirable unit and that there were no diversion problems involved.

The attorney general of the State of Nebraska at that time rendered an opinion both to Governor Crosby and the department of irrigation in which it was stated that we did not have a diversion problem.

I might say for the record that Governor Crosby said in his report that—

under the present proposed Ainsworth unit it would not seem to appear that there was any transwatershed diversion involved. The water which is used from the Snake River is used in the same basin, and, after being so utilized, is returned to its original drainage basin, the Niobrara. I do not feel that the use of the waters proposed for the Ainsworth unit would be in violation of the laws of the State of Nebraska.

The attorney general, in rendering his opinion on December 27, 1954, stated that—

we feel that careful reading of this opinion must of necessity lead to the conclusion that the Nebraska Supreme Court intended only prohibitive transwatershed diversion.

There the attorney General was speaking of the Osterman case, which was decided in 1936, in which they would not permit the water from the Platte River to be put into the Republican River watershed.

Under the facts disclosed by the report, a part of which is above pointed out, this unit under consideration cannot be construed to contemplate transwatershed diversion. The Snake River originally emptied into the Niobrara. In fact, a portion of it will still empty into the Niobrara. That portion which is being utilized for the proposed project is still in the same watershed and after it has served its purpose will eventually find its way back to the Niobrara.

Senator MILLIKIN. Is there any objection at all from Nebraska to this project?

Mr. SMITH. From the State?

Senator MILLIKIN. Take the State, or is there any at all?

Mr. SMITH. Yes. There are a few ranchers through whose lands this canal that we propose passes who are objecting to the canal.

Senator MILLIKIN. There is no official objection to it?

Mr. SMITH. No, sir.

Senator MILLIKIN. Is the viewpoint of the officials favorable?

Mr. SMITH. Yes. The question of diversion that I have just been discussing is entirely a State problem, and I do not think is necessary to discuss further here. As I stated before, the water that we proposed to use on this project originates within the State of Nebraska, so I understand that it is not subject to interstate compacts.

Senator MILLIKIN. Let me suggest that Mr. French take a look at the project and give us his opinion as to whether it requires opinions from other States.

Mr. LINEWEAVER. Yes, sir.

Mr. SMITH. The Niobrara River which this Snake River is a tributary of empties about a million acre-feet of water out into the Missouri every year and is not being used in Nebraska. This water is all running out of the State.

I appeared before a portion of the subcommittee on October 9, 1953, a portion of the Interior and Insular Affairs Committee of the House. They came to Ainsworth and went over this project, and at that time I pointed out that Dr. Condra of the university and conservation survey said that if this project was properly built there would be no trouble with seepage, and so forth. The people who oppose our project keep claiming to us and other people that we are going to have seepage troubles and that the reservoir will not hold water properly.

Senator MILLIKEN. Have any of those people asked for any hearings on the bill?

Mr. SMITH. They have attended the hearings.

Senator MILLIKIN. Have they asked to come before this committee?

Mr. LINEWEAVER. Yes, sir; Mr. Heth is here and is to testify following Mr. Smith.

Mr. SMITH. They used as one of their witnesses Dr. Lugn of the University of Nebraska, and he made the statement that the canal would seep and that the dam would not hold water. However, I have just filed with the House committee, and will be glad to supply it to this committee, a letter from Director E. C. Reed of the University of Nebraska, Conservation and Survey Division, the only people who have any equipment by which to make testings, and I inquired of him if there had been any core drill testings, subsurface, within the Merritt Dam Reservoir's area in Cherry County. To that letter he replied there had not been any core drill tests. There had been some surface surveys from outcropping many years ago and probably in the years of 1934 and 1935, but they had made no tests.

The Bureau, however, has made extensive core drilling testings in the dam-site area and has come up in their report with the statement that the subsurface under the dam area is sufficient to hold the water properly.

Senator MILLIKIN. How about the lands involved with respect to the canal?

Mr. SMITH. This canal that we propose is a line canal and 43 miles or 44 miles of the 53 miles will be line.

I should like to point out also here that the act of 1890 provided that all patents issued west of the 100th meridian reserved the rights of the United States in the patents for irrigation canals and ditches, and the western portion of our project is right at the 100th meridian, so that the canal which we propose in this project goes over lands which this reservation exists upon.

We have out there an area which we can improve. We have the soil, but we do not have the rainfall. We have a semiarid condition existing there. Some years we get enough total moisture, but it comes in the winter and spring and not in July and August when we actually need the rain. I should not say that is true every year, but about every 4, 5, or 6 years we have a normal year and in the other years we are always short in July and August.

We think that this irrigation project would be a great benefit to ranchers in the vicinity and it would stabilize a definite feed production which they need from time to time in dry years.

In the Scottsbluff area in western Nebraska after irrigation was developed, they became the biggest cattle feeders in the State of Nebraska. We have a cattle country adjacent to our lands and we feel it would ge a great benefit to that area in that part of Nebraska.

Senator MILLIKIN. What will be the principal crops?

Mr. SMITH. At the present time our principal crops are corn and small grains. We have some alfalfa, but our principal crops, of course, are going to be alfalfa feed—that is going to be one of the important crops—and there is going to be a diversity of crops there that can be raised if we have sufficient moisture or water to put on the lands.

Senator MILLIKIN. How many cuttings of alfalfa do you get a year?

Mr. SMITH. We have with us today, and he is over in the House testifying now, Mr. Henry Miles, who is one of our directors, and he has a pump-irrigated place or a portion of his place he can get water on. He gets 4 cuttings a year. It runs around 5½ to 6½ tons per acre per year.

Mr. LINEWEAVER. That is with irrigation?

Mr. SMITH. Yes. You will get about a ton and a half or maybe 2 tons in the dryland conditions.

I might say this year they did not get their first cutting. There was nothing to cut. Our alfalfa withered up and some of them went over and clipped off the tops thinking if they got rain we might get a second cutting, but in our dry lands we got no first cuttings this year.

I might say something about this pump irrigation. The area that we hope to irrigate by canal is an area in which we cannot get pump irrigation. We have some lands that have been excluded from the district south of our lands where you can get pump irrigation and we have 45 wells existing in our county at this time, but they are all within an area where you can get water by pump.

They tell me that on the basis of the underground flow through the area in which we are in 60 wells that will produce a thousand gallons per minute for the normal irrigation season will take care of all the inflow that we have in that area, so we are limited on pumps even outside of our district.

Senator MILLIKIN. Have they reduced the water level any by pumping?

Mr. SMITH. They have not to my knowledge yet. I have heard pump irrigators say, "Yes, if I have to pump a lot I notice that my water table drops, but it does come back in."

We have a condition of soil there that is coarse underneath. We do not have a drainage problem in the irrigation district, as I understand it, from the engineers.

Senator MILLIKIN. What is your average rainfall every year?

Mr. SMITH. About 21 inches.

Mr. LINEWEAVER. When does it fall?

Mr. SMITH. Too much of it falls before the first of June.

This year up to the 10th of May I think we had less than an inch of rainfall.

Senator MILLIKIN. Have you been affected by the drought that has somewhat hit that part of the country?

Mr. SMITH. We lost our small-grain crop this year. The fields have been plowed up and put into corn. We have received some rain since the 10th of May, thank goodness, out there, but we have no subsoil moisture and unless we continue to get rain we have nothing to rely upon.

Senator MILLIKIN. Do you raise any wheat in that country?

Mr. SMITH. Very little wheat in that area.

Senator MILLIKIN. Why is that?

Mr. SMITH. I cannot answer that exactly, but I know that wheat is produced up in our area on an average of about 15 bushels. Our corn will produce, I thing, or has averaged over the last 20-year period, 18 bushels to the acre. However, under irrigation one of the men who is with me last year produced 108-bushel corn, and I forgot on his small grain, but I think he got somewhere around 45 bushel. I think my statement is correct.

Senator MILLIKIN. Does the corn fully mature?

Mr. SMITH. Yes, it matures. We have another problem in our county. We lost about 800 population between the years of 1940 and 1950. A lot of these people belong to irrigation districts. In fact, a fellow got back from Idaho the other day and said that 60 of our Brown County people are in around Caldwell, Idaho. Most of our towns have increased in population, but our decreases have come from the farms.

Senator MILLIKIN. What are the principal towns in Nebraska that this project is near?

Mr. SMITH. Ainsworth is right at the center of the project east and west.

Senator MILLIKIN. What is the population?

Mr. SMITH. We have 2,150 people by the 1950 census, and I think our chamber of commerce says we have about 2,300 people now.

Senator MILLIKIN. What is your nearest sizable city?

Mr. SMITH. Omaha, 255 miles away.

Senator MILLIKIN. Go ahead.

Mr. SMITH. The Nebraska Reclamation Association in session last December went on record favoring this project.

The Missouri Basin Interagency Committee in May of last year went on record as favoring this project and urged that it be built.

The Mississippi Valley Association in session last February went on record by resolution favoring our project.

We have what we need out there, but we are not in position to develop this ourselves. We need some help to do this. We think that irrigation adapts itself not only to the immediate area, but to the

72662—56——3

adjacent areas and it would certainly provide our ranch area with a definite supply of feed.

We feel it will stabilize the economy of our area not only in the immediate area, but several miles around it. It will give us a chance to improve schools, churches, roads, and all of those things. The influence exerted on these adjacent areas is going to be very beneficial.

Senator MILLIKIN. What are the taxing privileges of an irrigation district in Nebraska?

Mr. SMITH. On repayment contract you set that up and levy a tax for that. Then you pay in addition to that operation and maintenance costs.

Senator MILLIKIN. However, the laws of Nebraska are sufficient to put a financial backbone on this kind of a plan?

Mr. SMITH. That is correct. Then you can also levy a tax for general operation of the office, and personnel, and so forth.

Senator MILLIKIN. The people are willing to do that?

Mr. SMITH. They voted for it 80 percent; yes, sir.

There is another thing that I might point out. We feel that these people who are along this canal line have failed to realize some of the benefits that they might receive, in that I understand and have been informed that under the Warren Act the people can get water from this if they so desire. We have a sufficient supply of water, as our report shows, and I think those arrangements could be made.

We feel also that not only will our income in our territory be bolstered, but the Federal Government is going to receive more income taxes and our local government agencies are going to have more valuation and we will have increased revenue as a result of this improvement.

I believe that concludes my statement and I will be glad to file a copy of that statement with the committee.

Senator MILLIKIN. Your statement will be made a part of the record.

(The statement referred to follows:)

REMARKS OF WILLIAM C. SMITH, JR.

My name is William C. Smith, Jr. I am an attorney with offices at Ainsworth, Nebr. I am now, and since the beginning of the organization of the Ainsworth Irrigation District have been, their attorney. I appear here on behalf of that irrigation district and on behalf of those interested in irrigation in north central Nebraska. Let me state here that the people in the Ainsworth community, as well as those within the district, are very deeply interested in putting water on the lands near Ainsworth, Nebr. So interested that 70 percent of the 267 owners of land signed petitions asking for a hearing before the Board of County Commissioners of Brown County, Nebr., to designate the boundaries, including some 34,000 acres, and to form an irrigation district. The county board published notices, as by law required, and held a hearing and set the boundaries of the district and called an election wherein 248 votes were cast, 204 in favor and 44 against; this election carried by 80 percent for the forming of the district. Let me here point out that of 267 owners, which included nonresident owners, 248 voted—practically all those in the district. This shows the tremendous interest within this irrigation district. At that same election, the district elected 3 directors, and those directors, since qualifying, have been studying repayment contracts and have more or less agreed to a contract as to form, and will enter into a final contract at the proper time. Irrigation board of the irrigation district has by resolution resolved that they have agreed as to a contract as to form and filed the same with the Bureau of Reclamation asking that a repayment contract be redrawn and resubmitted for approval.

Expert witnesses, appearing either before or after me, will have discussed or will discuss the physical, engineering, and economic aspects of the Ainsworth projects. It is not my purpose to discuss these aspects of the project, nor would it be appropriate for me to do so, since I am not qualified as an expert with respect to them. I can and do testify however to the urgent needs for water in the Niobrara Valley and the machinery by which it can be used.

Former Gov. Val Peterson of the State of Nebraska held hearings in the Niobrara Basin which hearings were well attended and petitions by 3,236 people were filed in favor of the development of this valley. In December 1954 the then Governor of Nebraska, Robert Crosby, held a hearing and reported to the Bureau of Reclamation favorably upon the development of the Ainsworth unit, pointing out that it was a desirable unit, and that there was no diversion involved, and the attorney general of the State of Nebraska rendered an opinion both to Governor Crosby and to the department of roads and irrigation of that State that taking water from the Snake River and using it on the Ainsworth lands was not diversion under the Nebraska law. Let me state at this time that if his were diversion, there is hardly any irrigation project in the State of Nebraska that could operate. The matter of diversion is covered by State law and should be left entirely to the State of Nebraska for decision.

The water that is being used on the Ainsworth project comes from the Snake River which originates within the State of Nebraska and, therefore, is not subject to any interstate compacts; and the Snake River being a tributary of the Niobrara is wholly within the Niobrara watershed. The Niobrara River has approximately 1 million feet of water that flows into the Missouri and out of the State of Nebraska unused, and at the present time there are no appropriations from the Snake River nor the Niobrara River, and the Ainsworth Irrigation District filed its appropriation rights on March 26, 1953, for the use of this water. Our former President Hoover made this statement: "Every drop of water that runs to the sea without rendering a commercial return is a public waste."

In my remarks before a part of this committee at Ainsworth, Nebr., on October 9, 1953, and in my remarks before this committee in April 1954, I called attention to certain testimony of Dr. Condra in which Dr. Condra stated that if the project is properly built, no serious damage will result from seepage of the canal and let me here state that the Bureau of Reclamation, who has made the investigation, says there are no serious engineering problems. Dr. Lugn has stated that the canal will seep and that the dam will not hold water, and at this time I would like to put into the record a letter from E. C. Reed, director of conservation and survey division of the University of Nebraska, and read a portion thereof at this time. You will note from Mr. Reed's statement that the university has not made any core drillings within the area of the dam site as has the Bureau of Reclamation and the Bureau of Investigation should, under the thorough investigation they have made, know all of the engineering problems and be able to give to this committee the correct answers. About the only objections that we have had to this project is from a few of the ranchers across whose land our canal crosses. I should like to point out that the act of 1888 provided that on all lands west of the 100th meridian, that Government reserved the rights in the patents for irrigation canals and ditches and the 100th meridian is just west of our project lands and the reservations mentioned hereinabove apply to those lands over which our canal route goes.

An opportunity presents itself here to improve an area that has the soil but not the rainfall and let me remind this committee that we live in a semiarid region where we get enough fainfall in some years but it comes in the winter and early spring, not in the months of July and August when we need it, and only about 1 out of every 5 or 6 years, so we people in this area are interested, and it is important to some 267 farmers in the Ainsworth unit, and an increased number if we had irrigation. We have heard objections that we would raise specialized crops for which we would not have a local market. You know, and I know, that the markets, more or less, move to the product and not the product to the market. To illustrate, in the Scottsbluff County area where irrigation has been developed, it has become the largest cattle-feeding center in Nebraska, and we are in the heart of the cattle country and with irrigation, it would benefit the ranchers to no end in this area.

We don't need to look beyond what we already have if we are permitted to develop what we already have.

Irrigation adopts itself to the need not only of the area, but the adjacent territory—it will assist and help and relieve the uncertainty of our large industry in this area and in all the areas to be developed in the basin, the livestock indus-

try—there is satisfaction in knowing that in dought years (and we have them) that livestock raisers within a reasonable distance can get feed.

A stabilized economy will extend many miles around these districts—an enlargement and improvement of our schools, our churches, and our roads. Irrigation exerts a large influence not only to the immediate area, but also to the adjacent areas.

Those people along the canal will be permitted to obtain water from the canal under the provisions of the Warren Act which, in my opinion, will greatly benefit those people.

We all know that irrigation will bolster our income and our Federal Government will receive increased revenue from income taxes and our local government agencies will have larger valuations from which increased revenues will result.

Senator MILLIKIN. What witnesses are appearing before the House?

Mr. SMITH. I will be glad to explain that.

I appeared a few moments ago before I came over here. Mr. Ben Clark, president of our district, is now appearing over there. He is a dryland farmer and on his place he has attempted for years to obtain a well and has not been able to do so. Mr. Miles, also a director of our district, is here, and he is testifying over at the House now. He has dryland farming and he is fortunate enough on one place that he owns to have a pump that produces 700 gallons of water per minute, and in which place last year he was able to irrigate 50 acres, but because of dry conditions this year he can irrigate about 30.

Senator MILLIKIN. Do I understand you have a district in being right now?

Mr. SMITH. Yes. It has been organized and in being since August 10, 1953.

Senator MILLIKIN. So that you have an agency qualified for a contract with the Bureau of Reclamation at the present time?

Mr. SMITH. Yes, sir, we do. We have with us also Mr. Hall Dillon, a county commissioner of our county, who owns lands within the irrigation district and is also a rancher and has ranches out of the district. We also have Mr. Oliver Anderson, who is a commissioner of our county, who is not in the district, but owns land adjacent to the district and over whose lands this canal passes. He stated before the House committee that he is not objecting to the canal. He thinks it is going to be a benefit to him because he possibly can get some water out of it, and he knows that many of the ranchers who live above him are not objecting for several miles.

We also have with us Mr. Roy Raitt, who is president of the Niobrara River Basin Development Association, which consists of about 800 members up and down the valley for 400 miles. That organization has promoted the development of four units in that valley since 1946. Mr. Raitt is a real-estate man in Ainsworth, Nebr., worked very diligently for many years, and is president of that organization.

I believe also one of the other witnesses who will appear for us tomorrow morning is Mr. C. Petrus Peterson, president of the National Reclamation Association. He is very familiar with our project and wants to go on record favoring the same.

Senator MILLIKIN. Have you anything further to say?

Mr. SMITH. I do not believe so, unless there are any questions, which I would be glad to answer.

Senator MILLIKIN. Have you any questions?

Mr. LINEWEAVER. No, sir. I would like at this time, Mr. Chairman, to incorporate by reference the report of the Ainsworth unit of Nebraska, dated March 1955. It is part 1, revised.

Senator MILLIKIN. What agency puts that out?

Mr. LINEWEAVER. The Bureau of Reclamation. It was prepared by Mr. Burdick.

Mr. Chairman, we can put in the record the letter of the Acting Commissioner to the Secretary of the Interior, dated March 16, 1955, and approved by the Secretary on June 10.

We can incorporate the report by reference.

Senator MILLIKIN. That will be done.

(The letter referred to follows:)

UNITED STATES DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington 25, D. C., March 16, 1955.

The SECRETARY OF THE INTERIOR.

SIR: This is my proposed report on a plan of development for the Ainsworth unit, Nebraska, Missouri River Basin project. It is based upon the accompanying report of the regional director at Denver, Colo., dated February 1955, with its substantiating materials. The regional director's report has been coordinated at field level with the various local, State, and Federal agencies having interests in the proposed project. Summary reports of the Fish and Wildlife Service and the National Park Service are incorporated in the substantiating materials.

No units were identified in the Niobrara Basin in the original report on the Missouri River Basin project (S. Doc. 191, 78th Cong.). A comprehensive investigation of the land and water resources of the basin resulted in a basin report dated June 1953, which outlined 14 potential units, but only 4 of these were considered feasible under present economic conditions, namely, the Mirage Flats extension, Lavaca Flats, O'Neill, and Ainsworth units. Public Law 612 of the 83d Congress authorized these four projects as units of the Missouri River Basin project but included a proviso as follows: "Construction of the units herein authorized to be included in the Missouri River Basin plan shall not be undertaken until a report demonstrating their physical and economic feasibility has been completed, reviewed by the affected States, and approved by the Congress." This report looks toward fulfillment of that requirement as regards the proposed Ainsworth unit.

The unit will consist of Merritt Dam and Reservoir, the Ainsworth Canal, and various distribution and drainage works to provide service for 33,960 acres of irrigable land. The reservoir site is in the valley of the Snake River, a major tributary of the Niobrara River in Cherry County, Nebr., about 25 miles southwest of the city of Valentine. The maximum controlled storage capacity will be 68,600 acre-feet, of which 67,500 will be allocated to irrigation water conservation and 1,100 acre-feet will be dead storage.

Ainsworth Canal will originate at Merritt Dam and will flow generally eastward for a distance of about 53 miles to the project lands in the vicinity of Johnstown, Nebr. Because of a severe problem of seepage about 44 miles of the canal will be lined with concrete.

The irrigable lands lie in a roughly rectangular district extending 22 miles east from Johnstown, and 14 miles north from the same point. The towns of Johnstown, Ainsworth, and Long Pine are adjacent to the irrigable area. The soils are inherently fertile, well drained, and well adapted to sustained irrigation. The water supply from the dam, through the main canal and distribution system to the lands is by gravity flow. Three areas, aggregating 2,589 acres, will require low lift project pumps. About 1,420 acres will also be furnished irrigation water provided each landowner installs his own pump lift.

The estimated cost of the Ainsworth unit based on prices prevailing in July 1954 is $25,934,000. This total includes an expenditure of $10,000 for fish screens at the reservoir outlets, and $14,800 for minimum basic recreational facilities. The total project benefits, after appropriate adjustment for negative benefits and the 5-year development period, are computed at $1,764,800 annually. Corresponding annual costs total $817,200 annually. These figures result in an overall benefit-cost ratio of 2.16 to 1.0. If direct benefits only are used the ratio is 0.87 to 1.0.

The foregoing calculations are based on an evaluation period of 100 years. If such calculations are made on a 50-year basis and including an appropriate salvage value the project benefit-cost ratio would be 1.98 to 1. Utilizing only direct irrigation benefits the ratio would be 0.78 to 1.

In the tentative allocation of construction costs, specific costs and the share of joint costs allocated to fish and wildlife conservation and specific costs of minimum basic recreation facilities are considered nonreimbursable. All other project costs are allocated to irrigation. The allocation of costs is as follows:

Irrigation	$25,433,100
Fish and wildlife	486,100
Recreation	14,800
	25,934,000

The annual payment capacity for all lands on the unit is computed to average $8.35 an acre. Annual operation, maintenance, and replacement costs, including the cost of pumping energy, are $2.30 an acre. The average annual amount available for water charges (repayment capacity) is $6.05 an acre. If 100 percent of repayment capacity is utilized $7,997,000 of the construction costs could be retired in 40 years. The actual amount of annual payment is subject to negotiation. Inasmuch as these returns will not retire the entire cost allocated to irrigation for repayment, assistance will be required from other revenues of the Missouri River Basin project. The required assistance would be $17,436,100 if 100 percent of payment capacity is negotiated. Should the repayment negotiations result in less than 100 percent of repayment capacity being required, the figures on repayment and assistance needed would be proportionately affected. Our analyses of the Missouri River Basin project indicate that the basinwide net revenues will be adequate to pay all reimbursable costs, including those of the Ainsworth unit in a period of time well within the useful life of the works.

Local interest in construction of the Ainsworth unit and in irrigation of the proposed lands is indicated by formation of the Ainsworth Irrigation District and the expressed willingness to negotiate a repayment contract under conditions as outlined in the report. A number of ranchers along the course of the Ainsworth Canal have expressed opposition to the project on the basis that it would be detrimental to their operations, a potential danger to livestock, and a possible source of water logging of adjacent lands. These objections may be partially overcome by fencing the canal right-of-way, lining the canal, and by the computation of such detrimental effects in determining the fair value of the right-of-way which must be acquired for the canal. However, most of the lands through which the canal will pass were settled under provisions of the Canal Act of 1890, by which easements and rights-of-way were reserved to the Government.

Opposition to the unit by a number of Nebraska ranchers has also been expressed on the ground that the diversions of water involved would be violative of Nebraska law relative to watershed diversion. It is pertinent to note in this connection that while such objections are being vigorously pressed and may result in litigation to determine the issue, both the then attorney general and the then governor of the State advised that they did not regard the proposed diversions here involved as being contrary to Nebraska law governing watershed diversion.

The recommendations of the National Park Service and the Fish and Wildlife Service are concurred in, insofar as they are compatible with the operation of the unit for its primary purpose. Normal operation of the dam and reservoir is expected to result in a live stream below the dam at all times, as recommended by both Services. Operation of the reservoir and the associated lands and basic recreational facilities for maximum practicable public use and enjoyment is contemplated. Negotiations leading to the final operating plan for these purposes will involve consultations among the Federal and State agencies interested.

Subject, of course, to consideration of comments received, I recommend that you approve and adopt this report as your proposed report and that you authorize its transmittal to the governors of all the States of the Missouri River Basin and to the Secretary of the Army in accordance with the requirements of the Flood Control Act of 1944; to the Governor of Nebraska for any report and recommendations which the head of the agency exercising administration over the wildlife resources of that State may wish to make in accordance with the provisions of the act of August 14, 1946 (60 Stat. 1080); and to the Federal agencies represented on the Inter-Agency Committee on Water Resources for their comments. Upon receipt of replies in response to these transmittals, copies

of the report, together with comments which are received, will be submitted for your further consideration and appropriate action.

Respectfully,

S. W. CROSTHWAIT, *Acting Commissioner.*

Approved and adopted: June 10, 1955.

CLARENCE A. DAVIS,
Acting Secretary of the Interior.

Mr. LINEWEAVER. And then also the report of the Acting Secretary of the Interior on the House companion bill, dated June 14, 1955, to Chairman Engle of the House committee.

Senator MILLIKIN. That will be placed in the record.

(The report referred to follows:)

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington D. C., June 14, 1955.

Hon. CLAIR ENGLE,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives, Washington, D. C.

MY DEAR MR. ENGLE: A report has been requested from this Department on H. R. 5749, a bill to provide for the construction and operation by the Secretary of the Interior of the Ainsworth unit of the Missouri River Basin project.

Provision for inclusion of the Ainsworth unit in the overall Missouri River Basin project authorized by the Flood Control Act of 1944 and supplements thereto was made by the act of August 21, 1954 (Public Law 612, 83d Cong., 68 Stat. 757). This act directed that the Ainsworth and other units in the Niobrara River Basin in Nebraska "be coordinated and integrated, physically and financially, with the other Federal works constructed or authorized to be constructed under the comprehensive plans approved by section 9 of the act of December 22, 1944, as amended and supplemented." It also provided, however, that construction of these new units "shall not be undertaken until a report demonstrating their physical and economic feasibility has been completed, reviewed by the affected States, and approved by the Congress."

Enactment of H. R. 5749 would give the approval of Congress contemplated in the language of the act of August 21, 1954, just quoted. The planning report of the Commissioner of Reclamation to which the bill refers (a report dated March 16, 1955, rather than March 15, 1955, as stated in the bill) has, however, just been sent forward to the States of the Missouri River Basin and to interested Federal agencies for comment. We will, therefore, not be in a position to make any recommendation with respect to enactment of H. R. 5749 for some time.

In view of the foregoing, the present report should be regarded as an interim report. It is confined to an outline of the findings contained in the Commissioner's report, a copy of which is attached for such more complete information as your committee, in its consideraiton of H. R. 5749, may require.

The physical works of the Ainsworth unit will consist of Merritt Dam and Reservoir, the Ainsworth canal, and various distribution and drainage works to provide service for 33,960 acres of irrigable land. The reservoir site is in the valley of the Snake River, a major tributary of the Niobrara River in Cherry County, Nebr., about 25 miles southwest of the city of Valentine. The maximum controlled storage capacity will be 68,600 acre-feet, of which 67,500 will be allocated to irrigation water conservation and 1,100 acre-feet will be dead storage.

Ainsworth Canal will originate at Merritt Dam and will flow generally eastward for a distance of about 53 miles to the project lands in the vicinity of Johnstown, Nebr. Because of a severe problem of seepage about 44 miles of the canal will be lined with concrete.

The irrigable lands lie in a roughly rectangular district extending 22 miles east from Johnstown and 14 miles north from the same point. The towns of Johnstown, Ainsworth, and Long Pine are adjacent to the irrigable area. The soils are inherently fertile, well drained and well adapted to sustained irrigation. The water supply from the dam, through the main canal and distribution system to the lands is by gravity flow. Three areas, aggregating 2,589 acres, will require low lift project pumps. About 1,420 acres will also be furnished irrigation water provided each landowner installs his own pump lift.

The estimated cost of the Ainsworth unit based on prices prevailing in July 1954 is $25,934,000. This total includes an expenditure of $10,000 for fish screens

at the reservoir outlets, and $14,800 for minimum basic recreational facilities. The total project benefits, after appropriate adjustment for negative benefits and the 5-year development period, are computed at $1,764,800 annually. Corresponding annual costs total $817,200 annually. These figures result in an overall benefit-cost ratio of 2.16 to 1.0. If direct benefits only are used the ratio is 0.87 to 1.0.

The foregoing calculations are based on an evaluation period of 100 years. If such calculations are made on a 50-year basis and including an appropriate salvage value the project benefit-cost ratio would be 1.98 to 1.0. Utilizing only direct irrigation benefits the ratio would be 0.78 to 1.0.

Of the estimated construction cost of $25,934,000, over 98 percent is tentatively allocated to irrigation and is reimbursable from payments by the water users and from power revenues of the Federal Missouri River Basin project. The annual payment capacity of the lands in the Ainsworth unit is computed to average $8.35 per acre. Operation, maintenance, and replacement costs, including pumping energy, are estimated at $2.30 per acre per year. Over a 40-year period, the water users could thus pay approximately $8 million of the reimbursable construction cost.

Local interest in construction of the Ainsworth unit and in irrigation of the proposed lands is indicated by formation of the Ainsworth Irrigation District and the expressed willingness to negotiate a repayment contract under conditions as outlined in the report. A number of ranchers along the course of the Ainsworth Canal have expressed opposition to the project on the basis that it would be detrimental to their operations, a potential danger to livestock, and a possible source of water logging of adjacent lands. These objections may be partially overcome by fencing the canal right-of-way, lining the canal, and by the computation of such detrimental effects in determining the fair value of the right-of-way which must be acquired for the canal. However, most of the lands through which the canal will pass were settled under provisions of the Canal Act of 1890, by which easements and rights-of-way were reserved to the Government.

Opposition to the unit by a number of Nebraska ranchers has also been expressed on the ground that the diversions of water involved would be violative of Nebraska law relating to watershed diversion. It is pertinent to note in this case that while such objections are being vigorously pressed and may result in litigation to determine the issue, both the then Attorney General and the then Governor of the State advised that they did not regard the proposed diversions here involved as being contrary to Nebraska law governing watershed diversion.

In view of the request that an interim report on H. R. 5749 be made available to your committee at or prior to the time of the hearings thereon scheduled for June 17 and 18, there has not been an opportunity to clear this report through the Bureau of the Budget. We are, therefore, unable to advise you concerning the relation to the bill to the program of the President.

Sincerely yours,

CLARENCE A. DAVIS,
Acting Secretary of the Interior.

Mr. LINEWEAVER. I may state the reason we do not have a report is that Senator Hruska introduced the bill only this week and we did not have an opportunity to make a formal request. That is an interim report.

Senator MILLIKIN. Who is the next witness?

Mr. LINEWEAVER. Mr. Kimon Karabatsos, who will just make a brief statement and then incorporate his full statement in the record.

Senator MILLIKIN. Sit down and make yourself comfortable, and identify yourself for the record.

STATEMENT OF KIMON T. KARABATSOS, EXECUTIVE SECRETARY, NIOBRARA RIVER BASIN DEVELOPMENT ASSOCIATION OF AINSWORTH, NEBR.

Mr. KARABATSOS. My name is Kimon T. Karabatsos. I am a native Nebraskan and the executive secretary of the Niobrara River Basin Development Association of Ainsworth, Nebr.

As Mr. Smith pointed out, the association has a membership of approximately 800. My statement here is pretty long. I am going to just submit it for the record, with your permission.

Senator MILLIKIN. It will be placed in the record.

(The statement referred to follows:)

My name is Kimon T. Karabatsos. I am a native Nebraskan and the executive secretary of the Niobrara River Basin Development Association of Ainsworth, Nebr. The association has a membership of approximately 800.

Naturally, our membership is quite anxious to see H. R. 5749, by Dr. Miller, and S. 2206 by Senator Hruska, of Nebraska, enacted into law and money appropriated to start construction of the Ainsworth irrigation unit of the Missouri River Basin project.

You have heard several witnesses before me which have told of the unstable farm economy of the area due entirely to unreliable and oftentimes insufficient rainfall. I do not farm myself; however, I own two small farms, which incidentally are not within the proposed project. The past few years have been very lean because of the drought conditions and just as soon as I am able to dispose of my dryland farms, I am going to get myself another irrigated farm.

I have listened in on the hearings conducted by this committee for several years and have heard much testimony on the need for irrigation and reclamation. Not being an expert on agricultural problems, I doubt if I can add anything personally which would help to calm some of the apprehensions you might have in regard to our agricultural surpluses.

However, I do want to bring to this committee's attention a few facts which have been presented by experts.

Senator Clinton P. Anderson, of New Mexico, who is a former Secretary of Agriculture, outlined in a speech delivered on the floor of the Senate these eight very important points:

First. We have approximately 1,904 million acres land area of which about four-fifths is being used for agricultural purposes. A fifth of this is actually used for cropland.

Second. We are losing about 1.4 million acres per year through use of land for highways, airports, reservoirs, military reservations, and expanding cities and erosion. Population increase could bring agriculture production in balance if production is adjusted to demand.

Third. We need, with the diet that we currently use, an equivalent of production from an additional 6 million to 7.5 million acres each year.

Fourth. We need, by 1975, at least 20 to 30 million acres of new cropland.

Fifth. Present crop yields per acre will have to be increased at least 20 percent during the next 7 to 10 years. This assumes we will place at least 6 million additional acres under irrigation.

Sixth. A drought of 1 year's duration with as ruinous effect as experienced in the 1930's would almost deplete our present supply of stored crops.

Seventh. Population of the United States is now 162 million, increasing nearly 3 million per year.

Eighth. For 1975 the population projection now considered as the most reasonable is about 207 million persons. Five years ago 190 million was considered the most likely projection for 1975.

Dr. Miller, on June 1, 1955, inserted in the record an excellent speech entitled "Thanks to Irrigation, We're Eating Well." Dr. Miller pointed out the important part irrigation plays in providing the specialty crops for a balanced diet.

And, perhaps more important he told of the importance of irrigating more land to meet the food demands of our mushrooming population. Quoting Dr. S. T. Shaw, Administrator of the Agricultural Research Service of the Department of Agriculture, Dr. Miller said that if the per capita consumption of meat continues at the rate of 1954, it will require 7 million more head of cattle, 3 million more sheep, about 10 million more hogs to supply the increased meat that would be needed by 1962—just 7 years hence.

The next paragraph of Dr. Miller's speech reads as follows:

"To provide pasture and feed for these additional animals would require another 35 million acres of land. This land is not available, but irrigated pastures could do much to alleviate this coming situation. You can pasture several times more animals on an irrigated acre than you can on a dryland pasture."

Economists predict a gross national product of $500 billion in the not-too-distant future. In studies made by the Department of Agriculture, it shows that the more money a person makes, the more meat he eats.

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Much of the land that will be brought under irrigation in the Ainsworth unit will be used to grow feed and forage crops for our meat animals. Feeding cattle is expected to be one of the leading industries of this area. The North Platte Valley is an excellent example of what we can expect from the Ainsworth project. Scotts Bluff County is located in the irrigated North Platte Valley. I lived there for a while and heard many oldtimers say that 50 years ago all you would see were a few skinny critters grazing. Today that county has more cattle on feed than any county in Nebraska. The reason is simple. The farmers are able to grow the feed and forage crops on the irrigated land and there is a ready supply of cattle coming out of the sandhills.

Irrigation and reclamation is one of our Nation's wisest investments. In the past 50 years, approximately $2.6 billion has been allocated to irrigation. It has been estimated that these irrigation projects have returned to the Treasury more than $4 billion in the form of new taxes. In direct payments, these Federal projects have repaid about $600 million of the original cost and are now returning an average of $60 million annually to the Treasury. What other Federal appropriations have returned this much to the Treasury?

I have a few statements from persons interested in this project but who are unable to attend these hearings. These include letters from from Lyle P. Dierks, of O'Neill, Nebr.; John D. Forsyth, of Niobrara, Nebr.; James W. Rooney, of O'Neill, Nebr.; all of whom are directors of the Niobrara River Basin Development Association; Karl Jones, of Ainsworth, Nebr.; and resolutions from the O'Neill Chamber of Commerce signed by Don Peterson, the president; and from the Nebraska Reclamation Association signed by Wallace Thornton, the secretary-manager.

With the committee's permission, I would like to make them a part of the record.

Gentlemen, this concludes my statement, and if there are any questions, I will do my best to answer them. Thank you.

Mr. KARABATSOS. Then I have some letters here from directors and other intersted people out in Nebraska who were unable to attend.

I would like to submit them for the record also.

Senator MILLIKIN. Give us some idea who they are.

Mr. KARABATSOS. Mr. James W. Rooney, who is a director-at-large of the Niobrara River Basin Development Association from O'Neill, Nebr.; Mr. John D. Forsyth, of Niobrara, Nebr., who is also a director; and Mr. Don Peterson, who is president of the O'Neill Chamber of Commerce. He sends a resolution which was passed by the chamber. And the Nebraska Reclamation Association sends a copy of their resolution, which they passed, urging passage and development of this project.

Then I also have some statements which have been made by the president of the Niobrara River Basin Development Association, Mr. Roy Raitt, and the other gentlemen who Mr. Smith mentioned who are over before the House at the present time.

Senator MILLIKIN. Tell us something about that organization.

Mr. KARABATSOS. The organization is composed of members all along the Niobrara River Basin, which extends across northern Nebraska from the headwaters. The headwaters of the Niobrara start in Wyoming and go clear across northern Nebraska, along Highway 20, I believe. I believe the Senator is familiar with that area of Nebraska. The membership includes farmers, ranchers, businessmen, and people from all walks of life.

Senator MILLIKIN. It is not an irrigation district?

Mr. KARABATSOS. No, sir.

Senator MILLIKIN. It is promotional?

Mr. KARABATSOS. It is an organization to promote the four proposed projects which we have along the river there.

Senator MILLIKIN. Those instruments which the gentleman described will be made a part of the record.

(The material referred to follows:)

O'NEILL PRODUCTION CREDIT ASSOCIATION,
O'Neill, Nebr., June 14, 1955.

SENATE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

GENTLEMEN: It is my understanding that Senator Roman L. Hruska of Nebraska has introduced a bill in the Senate, providing that the Ainsworth unit of the Missouri River Basin project be approved and construction and operation by the Secretary of the Interior be started in the near future.

The development of the Ainsworth unit will enable the farmers of that area to raise crops in periods of light rainfall. It will give them a chance to stabilize their operations. The Ainsworth unit will provide water for 33,690 irrigable acres. The operation of this unit will create new wealth, new markets, new jobs and new homes. It will increase the population of the area, provide for more family size units and stabilize the economy of the region.

In the 24 years I have lived in the basin, we have experienced 3 severe drought years. In other years crop yields were cut severely by periods of dry weather. Irrigation in the basin will help correct this situation.

I sincerely hope that your committee will see fit to support Senator Hruska's bill and that the Congress of the United States will pass the Senator's bill.

Very truly yours,

JAMES W. ROONEY,
Director-at-Large, Niobrara River Basin Developement Association.

NIOBRARA, NEBR., *June 14, 1955.*

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
House of Representatives, Washington, D. C.

GENTLEMEN: Statement in regard to H. R. 5749 to provide for the construction and operation by the Secretary of the Interior of the Ainsworth unit of the Missouri River Basin project.

The Ainsworth unit for irrigation is one of the most economic and feasible projects in the Niobrara River Basin and also in the State of Nebraska.

I would ask that your committee approve H. R. 5749 for the following reasons:

(1) That this 40,000 acres is excellent land if water is provided to supplement inadequate rainfall in July to September each year. The increased production will justify it.

(2) The production of alfalfa, soybeans, and other forage crops will help to stabilize the cattle industry immediately surrounding this good land area. This means wintering of seed-stock cattle in the sand hill area until spring grasses take over in the next season.

(3) The construction cost per acre on the Ainsworth unit is much below the average costs over the Nation irrigation projects and the benefits will be high to justify the approval.

That part of Nebraska should not be the forgotten part of the Nation. The economy of the area should have your support to approve its construction in the very near future.

(4) This area is served by the Chicago & North Western Railway from Omaha, Neb., to Crawford, Nebr. (400 miles). There are 75,000 people fighting to keep this railroad from discontinuing operation. The Ainsworth unit for irrigation would assure the operation of the rail facilities which serve all of the northern part of the State of Nebraska.

(5) Nebraska has never received its share of Federal grants for irrigation projects, therefore, our population has decreased in the years past. Our children are born and go through 12 years of grade school, many then go to college at our expense; where do they go to get work? To the States with the great irrigation projects paid for by the Nation. That is why I say we are the forgotten area.

I ask that your committee report this bill out for passage. The surveys are complete and approved by the Bureau of Reclamation.

Thanking you for the privilege of introducing this statement.

Sincerely,

JOHN D. FORSYTH,
Director of the Niobrara River Basin Development Association.

NEBRASKA RECLAMATION ASSOCIATION,
Lincoln 8, Nebr., June 14, 1955.

SUBCOMMITTEE ON IRRIGATION, COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
House of Representatives, Washington, D. C.:

With reference to H. R. 5749 to provide for the construction and operation by the Secretary of the Interior of the Ainsworth unit of the Missouri River Basin project, now before the subcommittee, we respectfully call your attention to the following resolution which was unanimously adopted by the Nebraska Reclamation Association in annual convention assembled at McCook, Nebr., on December 10, 1954:

Whereas the Bureau of Reclamation initiated an overall survey of the Niobrara Valley in 1948, to study irrigation, power, and flood control; and

Whereas the initial study having been completed, and the report is now being reviewed by the Bureau of Reclamation and the Department of the Interior; and

Whereas Congress has authorized the Niobrara River Basin to become a part of the overall Missouri River Basin plan: Now, therefore, be it

Resolved, That we urge congressional approval of funds for the development of feasible projects in the Niobrara River Valley of Nebraska.

The Nebraska Reclamation Association respectfully requests your favorable consideration of H. R. 5749 which, if approved by the Congress, will permit the needed development of irrigation in the Niobrara Valley area.

Respectfully submitted.

WALLACE THORNTON,
Secretary-Manager.

CHAMBER OF COMMERCE,
O'Neill, Nebr., June 14, 1955.

SENATE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

GENTLEMEN: We herewith submit the following resolution:

Be it resolved, That the board of directors of the O'Neill Chamber of Commerce go on record in favor of S. B. 2206, a bill to demonstrate the physical and economic feasibility of the Ainsworth unit of the Missouri River Basin project. Our board of directors feel that the Ainsworth unit is feasible and should be completed in order to stabilize the economy of the region; therefore, we respectfully urge that S. B. 2206 be passed by the Congress of the United States.

Very truly yours,

DON PETERSON, *President.*

REMARKS BY ROY D. RAITT, PRESIDENT, NIOBRARA RIVER BASIN DEVELOPMENT ASSOCIATION

Mr. Chairman, members of the committee, my name is Roy D. Raitt. I reside at Ainsworth, Nebr. I was born and raised on a farm. All my life, I have been closely associated with farming and livestock raising. At present, I own and manage the activities of a stock farm on a partnership basis.

I am speaking today as president of and in behalf of the Niobrara River Basin Development Association, a valley organization that had its inception in 1946. Today it has a membership of slightly over 800 members throughout the valley. This membership is supporting an organization that is exclusively interested in the development and more efficient utilization of the land and water resources of the basin.

I appeared before this committee during the 83d Congress and spoke in behalf of H. R. 8520 which called for the inclusion of four units—Ainsworth, O'Neill, Lavacca Flats, and Mirage Flats extension—in the Missouri River Basin project. The Congress saw fit to pass that bill and it became Public Law 612 of the 83d Congress. Now we are before you seeking the necessary legislation to carry out the provisions on section 2 of that law which states that construction shall not be undertaken until a report demonstrating their physical and economic feasibility has been approved by the Congress.

There were objections to the Ainsworth project 2 years ago, just as there are today. However, these objections are the same and no new evidence has been introduced against the project. I could review my complete testimony presented to this committee during the last Congress, but since it is a part of the committee files, I do not want to waste your time.

However, I do want to add just a few statements which will take just a very few minutes.

The fluctuating climatic conditions in this basin have brought many recurring drought periods. We have experienced the most recent one of these periods during the past 90 days. Our dry winter period was followed by less than 1 inch of rain during the months of March, April, and up to the 22d day of May. This is the time of the year that we usually receive our most favorable rainfall; however, the lack of moisture this year reached the critical stage where breeding herds were being disposed of for lack of grass, and small-grain crops were withering while precious topsoil was blowing away. Only those few who were fortunate enough to have been able to have put down an irrigation well and put water on their land were the ones able to save their crops. Unfortunately, there is only a very small percentage of the area within the valley that it is possible to irrigate from. In other areas, such as the Ainsworth unit, it is necessary to import water for irrigation needs. It is the aim of our association to furnish the assistance that is required to make these developments a reality.

There are some who would lead you to believe that all of the ranchers in the territory are against this project. I would like to remind the committee that last year we submitted a petition bearing the names of about 225 ranchers running nearly 100,000 head of cattle on about a million acres of land who are in favor of this project.

Fortunately for the cattlemen and farmers alike, we have been blessed within most areas in the valley with approximately 4 inches of rain that has fallen since May 22. Needless to say, this has brightened the prospects a considerable amount with this much needed moisture. However, it came too late for much of the small grain and the upland hay crop.

We are here today in behalf of H. R. 5749, a bill introduced by our own Congressman A. L. Miller from the Fourth District of Nebraska to show the physical and economical feasibility of the Ainsworth unit of the Missouri River Basin project. Gentlemen, in behalf of the members of this association I want to respectfully ask that you weigh the engineering evidence with respect to the feasibility of the Ainsworth unit and if such is done, I feel sure that you will give it a favorable report.

Gentlemen, I thank you.

Statement by Henry Miles

Honorable Chairman, Congressmen, and others, my name is Henry Miles, and I am a member of the board of directors of the Ainsworth Irrigation District, and also an active farmer operating land in the boundaries of the Ainsworth Irrigation District. I am appearing here on behalf of this project, because I believe in water conservation, in conservation of our national resources, and the development of our good fertile soils, in our semiarid regions by irrigation.

At the present time I am irrigating some land by pump and have for the past 12 years. I have found it advantageous to do so. But I own land as do many of my neighbors that is suitable for irrigation on which, so far, we have been unable to get water to irrigate by pump. My irrigated alfalfa made 1½ tons to the acre (first cutting), even though it had been extremely dry this spring.

I know that the future economy of our entire Nation depends on a planned program of soil conservation and complete development of our water resources. I feel that the Ainsworth project is a small part of this program, but a part that should not be overlooked now. It takes years to develop this project. After they are started, and isn't it true that the best forecasters of the future say, "We will have to increase our national production in foods in years to come to keep pace with increasing population"?

Nature has given us the soil and the water. We are asking for your help to bring the two together.

Statement by Karl Jones

My name is Karl Jones, and I own and operate the Jones Implement Co., of Ainsworth, Nebr. In addition to farm implements I also sell sprinkler systems. I wish to make a statement concerning the interest being shown by people in irrigation in the Ainsworth area. This spring, our firm has installed 12 sprinkler systems in this vicinity. Of these 12 systems, 10 are irrigating from creeks and rivers, and the remaining 2 are irrigating from wells. Five more wells are

to be drilled as soon as time will permit, and these are all to have sprinkler-type systems. All of the above units are costing on the average between $3,500 and $4,000, depending upon the depth of the well. I feel that the increased interest in sprinkler systems and wells shown by the people of this area is an indication of their faith in the many benefits of irrigation.

STATEMENT BY OLIVER ANDERSON

I, Oliver Anderson, am a Brown County commissioner and reside at Johnstown, Nebr. I was born on a farm in northeastern Nebraska and am now in the livestock business.

At present I operate approximately 11,000 acres of ranch land on which I own 1,100 cattle which are run on this ranch.

This ranch lies adjacent to the Ainsworth Irrigation District, and the proposed canal runs through my ranch. I am not worried about the canal damaging the land. It will be a benefit to the ranch as I will file for the use of water on it.

I feel that this irrigation project will be a benefit to me, because I will be adjacent to a dependable feed supply.

I am familiar with neighbors along the canal above me, and I know they are in favor of this project. Other people testifying here mentioned about the drought and people disposing of their herds.

In my case if we would have gone another week without rain, I would have had to move cattle and fast.

We have had rain, but 1 week of hot winds would be bad, as we don't have any subsoil moisture. I am here testifying because I am highly in favor of this project and think it is a must for our country. Thank you.

STATEMENT BY J. HALL DILLON

My name is J. Hall Dillon, a resident of Long Pine, Nebr. I have been a county commissioner in Brown County for 17 years and have been a resident of Brown County for 46 years. My entire life has been spent in the Niobrara River Basin.

I am a landowner and livstock producer, owning 15,000 acres of sandhill rangeland fully stocked. In addition, I own 240 acres of farmland lying within the proposed Ainsworth Irrigation District. On this farm, I have made two attempts to get pump irrigation and have drilled two test wells but did not find sufficient water.

The farmers in this district practice rotation of crops so as to conserve the soil by putting one-half of the acreage to corn and the balance to small grain and alfalfa. Because of a 6- to 8-month moisture shortage, the small grain and alfalfa crop is now nil. The alfalfa has not been cut, only on pump-irrigated farms. The wheat will not pay for the expense of combining, and the oats and rye are the same.

Our revenue departments are going to find themselves in the red, in these drought areas, and the assessments of personal properties for county, State, and Government are going to be reduced greatly. There will be no revenue from one-half of the acreage of the dryland farms in our area, and if we do not get a lot of rain in the next 60 days, the corn will be the same as the small grain and alfalfa.

At the present time I am buying alfalfa from irrigated farms, and paying $15 and $16 per ton on the ground and will still be out the expense of trucking it to my farm and ranch to hold my livestock. If it were possible for the proposed canal to run through my 15,000-acre ranch, it would increase the carrying capacity to such an extent the value of the ranch would be increased by $50,000. But there is no chance, as my ranch lies 30 miles from the proposed canal. I would be very happy to trade acre for acre with some of the boys who are so very fortunate as to have the possible opportunity of having the proposed canal running through their ranch. It would reduce the possibility of being dried out and would eliminate having to buy hay at $15 or $16 a ton on the ground, to maintain a breeding herd.

Could 802 Nebraskans Be Wrong? Irrigation Pays

By Albert Bruveleit

Having seen and heard both sides of the issue concerning the Ainsworth Reclamation Bureau's proposed irrigation project, I firmly believe that irrigation will work, and must work, if a prosperous area is to be produced from the many scantly producing areas to be seen around the Ainsworth vicinity today.

While in Idaho, I actually saw an irrigation project, similar to the one that would be erected here, in action. The following figures may relay what might someday be possible for Ainsworth with irrigation.

My sister lives 4 miles south of Burley on an irrigated farm. The usual one-third of all crops goes to her. With their irrigation project, the wheat in 1954 yielded over 60 bushels an acre, and alfalfa produced 7 tons per acre. One-third of the crops amounted to $2,345, taxes on the 80 acres were $200 and one-half of the water's cost was $150. It will be agreed that the $150 would seem a mere drop in the "big ditch" compared to the $2,345 profit for the year.

Not only has their 54-year-old irrigation project helped the landowner, but upon seeing Burley, a town of 6,000 inhabitants, it would be readily seen that the town has, only naturally, prospered right along with the individuals living around the town. A few examples of improvements found in the town are: The building of a new courthouse in 1937; the new schoolhouse project costing them $400,000; and the elevator built for $1 million, which is the largest elevator in all of Idaho. I feel the credit for such improvements are justly given to their water project.

Upon leaving Burley, I journeyed to Boise by way of Twin Falls, to visit my son and daughter and their families. It was then that I saw the well-fed cattle, both milk cows and feeder cattle, plus alfalfa stacked even yet, and the sign of green life beginning everywhere.

During my stay at Boise, I visited with my son-in-law, William Rolston. They live 2 miles south of town, where they have new buildings, and an exceptionally fine milkhouse, costing $5,000. They have 30 milk cows. It may be of interest to note I saw 20 acres of Italian prune trees—1954 prune crop sold for $11,000. They rent a small acreage, and their water bill amounts to around $3 an acre. He runs about 40 head of cattle on 30 acres. Remarkable—any rancher would agree.

From Boise, I traveled westward to Payette, another town similar to Burley, with many new buildings, extra productive pastures, and all else that comes with an abundance of water.

My next stop will long remain a highlight in my thoughts, for Caldwell Canyon County is considered the most prosperous county in the world. It is comparatively simple to see why, for there are good crops on every piece of land every year without fail. They don't gamble with rain. Certainly irrigation is the answer to many problems.

Another living example of how the irrigation project has proved successful is the 85 acres my son, Donald, rents 10 miles northeast of Caldwell. He has 25 acres of pasture, 25 acres of alfalfa, 15 acres of barley, and 20 acres of corn. His alfalfa produced 5 tons an acre; the barley, 100 bushels an acre; and corn, 70 bushels. He pays one-half of crops for rent and $10 an acre for pasture rent. For this exceedingly low price, he has a small orchard and fruit, plus convenient modern buildings.

To further explain the financial profit in irrigation projects, I will report that taxes on the land are $200 and water rent is about $7 an acre. Both the landowner and Donald pay half.

Land is selling high; 80 acres will sell for $25,000 to $35,000. The old project beginning 54 years ago, of which I have been speaking, is completely paid for now. The new project is 35 years old and is nearly paid for. Though an irrigation project of this nature is hard to pay for at the present, our children will only be paying $2 or $3 an acre while we are paying $6 or $7, but such action is justified, for is it not true that all posterity has gained only through the extra giving by those before them?

During my entire trip I was astounded at the vast new buildings in town, the huge churches, the large number of new business houses in every business center, and the wealthy tenants and landowners. It all goes to show what water has done. It must be a success for, instead of such projects diminishing, Idaho is building more identical projects.

There are those who believe the Ainsworth project is not for Brown County, but the 802 Nebraskans who have moved from Nebraska to Idaho so as to take advantage of the irrigation project woud never agree with such a statement, and even more impressive is the fact that 66 of the 802 families have moved from Ainsworth. There are no doubt more, but 66 registered at the Nebraska picnic held at Caldwell, Idaho. All registered as firm backers of the irrigation project they are now in contact with.

If an irrigation project would bring but that many Idaho residents back to Nebraska, who have moved there perhaps because of insufficient underground water to provide adequate irrigation for crops here, Nebraska would undoubtedly prosper, for Nebraska has the same possibilities of irrigation as I saw in Idaho.

Senator MILLIKIN. Have you any others?

Mr. KARABATSOS. That is all.

I just wanted to point out a few things. I talked with Governor Anderson the other day and he reaffirmed that he would get the report back as quickly as possible because he was approving it without reservation. A couple of months ago when he was back in Washington, D. C., he appeared on a radio program with Dr. A. L. Miller, a Member of Congress from the Fourth District of Nebraska, and he said he was supporting the project.

I just wanted to take 1 minute to speak my piece about irrigation reclamation. During the past few months, it has come under a vicious attack. A lot of it is unnecessary and is uncalled for. We know what irrigation can do out in our country, Senator. Weld County, in your fine State, is a wonderful example of how a farmer can be dried out in one area and in the county next to him which has irrigation, he can make his living. The same is true in the North Platte Valley, of Nebraska. We have irrigation there and it contributes much to the economy.

I believe the Bureau had figures the other day which showed that $2.6 billion has been allocated to irrigation and reclamation in the last 53 years. Of that amount a lot of it is being paid back and with the new wealth that it creates and new taxes it is estimated that it has brough in over $4 billion.

I do not know of any Government investment which has paid off the rich dividends as irrigation and reclamation has.

Our population is increasing at a tremendous rate. By 1975 the estimates range all the way from 205 million to 220 million people. Just to produce enough red meat for our demands we are going to need an additional 35 million acres of land and we just cannot go out and pick it up. We have to produce more on our land. Irrigation can do a lot to help alleviate that situation.

If you have any questions, I would be glad to answer them.

Senator MILLIKIN. Will you stop that loss of population if you get this project?

Mr. KARABATSOS. I believe it will. All of our States that are increasing in population are those States which have irrigation reclamation, as, for example, Arizona, and Colorado in certain areas.

I have 2 farms in Nebraska. One is irrigated and 1 is dry land. The dry land is down in the southeast corner and right now I am having a hard time getting a tenant to operate it for me.

Then 1 is in Scotts Bluff County. I have to beat the fellows away from the door. They want to come in and go to work on that one, so I think that is a good example. I think it shows it holds the population and brings it. Scotts Bluff in 1900 was not completely staked out. The county of Scottsbluff was about 5,000. They had a real-

estate man come in and stake out the town. Now it is a city of about 14,000. The county itself is the third largest populationwise in Nebraska, and 50 years ago there were but a couple of hundred people there.

Senator MILLIKIN. Are there any power rates in there?

Mr. KARABATSOS. No, sir; there is no power in this project and no flood control benefits either.

Mr. LINEWEAVER. Mr. Chairman, I might call your attention to this: The power revenues of the Missouri Basin would make up the repayments all over and above what the project takes.

Mr. KARABATSOS. Nebraska uses a lot of power from the Missouri Basin.

Senator MILLIKIN. Have you anything else to say?

Mr. KARABATSOS. No, sir; that is all, unless you have any other questions.

Senator MILLIKIN. All right, sir. Thank you very much.

The next witness, please.

Mr. LINEWEAVER. Mr. Lynn Heth, of Valentine, Nebr.

Senator MILLIKIN. Make yourself comfortable, and identify yourself for the record.

STATEMENT OF LYNN E. HETH, ATTORNEY AT LAW, VALENTINE, NEBR., REPRESENTING THE SANDHILLS CONSERVATION ASSOCIATION

Mr. HETH. My name is Lynn E. Heth. I am an attorney at Valentine, Nebr., representing a group of people in Cherry County who, for a name, have called themselves the Sandhills Conservation Association. We call it that because we want to conserve the greatest cattle country in the whole world. We do not have to say United States. We say in the world.

I would say by its own bootstraps it has lifted itself up and without help or without cost from others the people have improved their land and made it better today than it ever was.

They planted their own tame hay in these meadows that are subirrigated. They are subirrigated because the sand is porous. When it rains there is very little runoff. That is why the report shows that the Snake River is one of the most constant streams in the country, in fluctuation, because when there is a rain the water does not rush to the stream, but it is held in these pockets in the sandhills and works down through the sand and keeps a constant flow of water.

In that connection we did have Dr. Lugn at the hearing a year ago, and at this point I might say that there are only two of us here this year. We are not a rich outfit. We are not subsidized, so we have only two here, but I do have a copy of the statement which was made to the committee last year by Dr. A. L. Lugn, professor of geology of the University of Nebraska. That report calls attention to the delicate balance of water in that great area out there that produces this grass that makes it the best cattle country in the world. The county of Cherry is entirely within the sandhill area, and perhaps "Sandhills" is a misnomer, because those hills are covered with grass all over.

Senator MILLIKIN. I am glad you developed that. That is what I have been driving at. "Sandhills" gives a depressing picture of the country.

Mr. HETH. Sir, you woul dbe surprised. Now it looks like the parks around here with grass.

Senator MILLIKIN. You cannot beat that.

Mr. HETH. The grass in the hills will grow any time of year that rain falls. If we get a rain in September the grass will grow. Mother Nature has prepared that country. We do not want it destroyed or any part of it, and we feel that if this starts that may eventually come. They will take out more water and more water until they destroy that country.

In the springtime, as Mr. Smith says, you have the higher percentage of your moisture and those meadows are at this time of year covered with water and you could not hay them, but by mid-July and August this water that has reached the streams and worked out is down to a point where they can go in and cut that hay. As I say, it is a sub-irrigated meadow. They say along this canal it is going to be lined. In that connection, I think somewhere in the record they have proposed a 4-inch concrete line. Out there we have had 8-inch concrete pavement buckle from winter frost. In places this canal is going to go through where this water table is up almost to the top of the canal and where that cement is exposed the frost is going to hit that and it is going to crack and buckle. It is going to break the seal in that concrete lining until it becomes a drain when it is empty. It is going to become a seepage problem when it is full.

It is empty in the springtime when this water ought to stand on the meadows. It will drain that water off when it ought to be there. Then comes July and August when they should be haying those meadows. The canal will be full and it will seep out and make those meadows so wet that they cannot cut the hay.

Senator MILLIKIN. That is on the assumption that the canal will crack?

Mr. HETH. That is correct, sir. We know it will crack, because ranchmen have tried concrete bottoms in their water tanks or cattle tanks, and they last about 2 years and the freezing cracks them and breaks the seal.

In that country also they generally build a set of improvements along the north side of one of these valleys. I should say that the country runs in a northwest and southeast direction. There will be a ridge of these sandhills and then a valley, and another ridge of sandhills and a valley, so they will build their improvements back against one of these hills, and, of course, the water table is high in the valleys, and nobody has yet devised a basement that will keep out that water.

We have with us today Mr. Ted McGinley, who was over testifying before the House committee.

Senator MILLIKIN. I wonder if someone here from the Bureau of Reclamation can tell us whether you think you can make a canal out there that will not crack and be absorbed with seepage.

Mr. BURDICK. We feel that we can, sir.

Senator MILLIKIN. Go ahead.

Mr. HETH. Mr. McGinley has a house that was built on top of the ground and then they filled up around the house. Where it was built it was on moist sand, not a lake, but the sand was moist. Then they filled in around the house. They did not dig a basement. They just built the basement and filled up to it. The water did come up in there to the extent that his basement was flooded, so he broke out a section of the basement floor and ran some well screens back under the rest of the concrete floor. He ran them over to a sump hole and has a sump pump and every time it rains the seepage is enough that it rains into this sump pump and pumps it out. That way it keeps the water out. He says the basement is damp, but it keeps the water out that way.

We had another man out there who built a new house. He thought he had a seal fixed. He did have a pretty good one. It was so good it floated the house up 6 inches after they built the basement. The water table rose and floated that basement up 6 inches.

Senator MILLIKIN. Do you not have a drainage problem rather than an irrigation problem?

Mr. HETH. We do not want any drainage.

Senator MILLIKIN. I say, is that not your problem rather than an irrigation problem?

Mr. HETH. No; because we want that water there. That is what grows the hay. We do not want any drainage out there because the balance is there and by midsummer that is down enough that you cut the hay on these wet meadows.

This Merritt Dam is to be located on the Snake River which, incidentally, is completely a Nebraska stream. It empties into the Niobrara just as the Niobrara empties into the Missouri, and the Missouri empties into the Mississippi, so if you call it a part of the Niobrara watershed, then it is a part of the Mississippi watershed.

Where this is to be built, I believe it is shown that the dam is to be tied in at the right-hand side into the ash hollow formation and on the left-hand side is to be tied into dune sand. That is all there is on the west bank, sand that is pure sand.

They said it is not going to seep because they are going to face the dam with impervious material, which they can find in the vicinity of the dam. Perhaps they have found such material there. I did not know it existed, but they say they have found it, so I accept their finding.

However, they are only going to line the face of that dam. Taking this room as an example, if you have a porous floor and if that door over there were opened and you ran water in here, the bulk of the water would go out that door [indicating]. A little would go through the floor, but if you closed the door and let the pressure build up in here, then water would seep out clear to the back of the room because of that pressure.

Maybe they are going to line the face of this dam and the water will not seep directly through the dam, but they have 6, 7, or 8 miles of this backup in the sand area that will go right out under the dam because, as their own report says, there are 320 feet of the same formation below the base there at the dam site.

Senator MILLIKIN. Will the gentleman from Reclamation please give us his observations?

FURTHER STATEMENT OF CLYDE E. BURDICK, AREA DEVELOPMENT ENGINEER, BUREAU OF RECLAMATION

Mr. BURDICK. The Bureau of Reclamation has conducted extensive tests around the Merritt Dam site. We have done a great deal of drilling. We put down more than 220 holes, constituting about 16,000 feet of drilled holes to determine what the foundation and the geologic conditions were. We have conducted tests to find the permeability of this material, as to how fast the water would travel under it, and our chief engineers office in Denver has conducted extensive tests and they have arrived at the conclusion that a dam can safely be built at this location.

Senator MILLIKIN. Thank you.

STATEMENT OF LYNN E. HETH, ATTORNEY AT LAW, VALENTINE, NEBR., REPRESENTING THE SANDHILLS CONSERVATION ASSOCIATION—Resumed

Mr. HETH. I understand, sir, that I am not permitted to ask questions, but I wonder if it might be of interest to the committee as to what that seepage was found to be at the dam site.

Senator MILLIKIN. Can you tell us that?

Mr. BURDICK. Yes, sir. The seepage from the entire reservoir area was concluded to be about 40 second-feet. It was considered that this was not excessive for this dam and that the seepage from the reservoir area, most of it, would return to the Snake River below the Merritt Dam site.

Senator MILLIKIN. Thank you.

Go ahead.

Mr. HETH. I believe there was a question raised at one hearing as to whether there was a comparable project in Nebraska or anywhere from which information could be drawn as to the probability of this reservoir holding water. We have quite a reservoir out there, known as the Sutherland project. If I am not mistaken Mr. Burdick was an engineer on that project back a long time ago. When they were considering construction of that dam, it was found that there was some impervious material at the point where they would build the dam. Dr. Condra, the dean of geologists at Nebraska, who has made an enviable record of mapping the waters of the State, and Dr. Lugn, his assistant, were both consulted in connection with the Sutherland Reservoir. They strongly advised against building it. They strongly advised against removing this impervious material, but it was removed. The dam was built with a capacity of—I am drawing on my recollection—5,000 acre-feet, and they have never been able to hold more than a third of that amount of water in that reservoir because of seepage. They have had the water they could put in there, but the seepage was so great that they could not stand the expense of claims before the reservoir that was constructed on the same formation on which they wish to build the Merritt Dam.

Senator MILLIKIN. What does the gentleman from Reclamation have to say about that?

Mr. BURDICK. I do not believe that the Sutherland Reservoir and Merritt Reservoir are comparable.

The Sutherland Reservoir was constructed on top of the hill, so to speak, on the south bank of the South Platte River near Sutherland, Nebr. The hydraulic gradient or the grade from the water surface in the reservoir down to the stream below is probably much greater than it would be in Merritt Reservoir.

In the Merritt Reservoir, I might call your attention to the fact that the ground water now surrounding the reservoir is higher than the proposed normal water surface in Merritt Reservoir for some distance around except downstream. It does not appear to me that they are comparable.

Senator MILLIKIN. Go ahead.

Mr. HETH. The reference I made was to the gentleman who advised against the Sutherland Reservoir who says that this is the same formation. He also says that it is the same Ogallala formation out of which they pump water at Alliance, Nebr., at the rate of 3,000 gallons a minute. If it would come out of there at the rate of 3,000 gallons a minute, it will go in at 3,000 gallons a minute. The watershed of Merritt Reservoir will replace the equivalent of three atmospheres on the base of the reservoir.

Senator MILLIKIN. I have to go over and get ready to vote.

Will you continue the examination, Mr. Lineweaver?

Mr. LINEWEAVER. Yes.

Mr. HETH. It would drift on down the canal which, as the record shows in numerous places, is 53 miles long.

That canal crosses through, first, what we call common sandhill land, rangeland. After perhaps 15 miles of it it gets along the edge of these hay meadows that I have described.

There has been much talk that this land lies west of the 100th meridian and from the statements made you might be led to believe that every piece of land there had a right-of-way for ditches or canals constructed by the authority of the United States, but about 25 percent of this distance is either school land owned by the State of Nebraska, which predates that act, or is land that was patented before that act.

They talk of a few ranchers involved objecting. I believe the present number is 80 contributing members to the association. That may be a few in some people's language, but it is quite a few people interested enough to finance some sort of an objection to this project.

In the report they set up only $1,700 to take care of damage to property. There is one small operator down there who bought a 1,400-acre place. He paid $40 an acre for it and this canal bisects that place right through the middle. $1,700 is not even going to pay for the land across that place. It is not going to begin to pay the damage of severance to that man's place.

There is a little widow there with about 280 acres. They are going to cut her place right in two.

Maybe there is such a provision in the law, but here are these people who have worked out there a lifetime who have built these places up and surely the Government is not going to come in and put them out of business under that provision.

There is no statement made as to what the right-of-way will be. They talk about 600 acres for the canal. Some other place there is a statement made of 150 feet. If it is 100 feet wide and 53 miles long,

in my book I think that runs about a thousand acres of land that they are going to take for the canal.

I have already dwelled on the matter of seepage from that canal, how it will seep when it should not, and how it will drain when it should not.

To touch on the matter of acres that they are taking, by their own figures in the report they are going to use more than 10,000 acres for the reservoir, the canal, the laterals, the borrow pits, and once you borrow land out in that country it is done as far as ranch country is concerned. The laterals are going to destroy 10,000 acres of land in this 33,960-acre project.

There has just been released by the Geological Survey a ground water survey of this Ainsworth unit area. The report has not yet appeared in print, but should be available to the committee from the office here in Washington. It shows that there is available in this 33,960-acre project ground water sufficient to irrigate over 10,000 acres of land by pump irrigation. There is 10,000 that they can do by pumps, and by their own statements, pump irrigation is profitable in the area where they get the water. They are going to destroy 10,000 acres, so let us offset it against another 10,000 acres and it leaves only 13,000 acres that might not receive water.

To put the project through on that basis is certainly going to be a high price to pay for 13,000 acres of irrigated land.

The statement was made that last year they had produced 108-bushel corn on irrigated land, and that the average on the other land was about 18 bushels to the acre. When they take that 18 bushels per acre average they are considering an awful lot of land that never should be farmed in the first place.

There was a gentleman up in my office the other day from Ainsworth who owns a 10-acre tract adjacent to Ainsworth who said he raised 80 bushels of corn to the acre last year without irrigation and that his neighbor, who used irrigation, did not even harvest his crop because there was too much water on it. At least that was his opinion as to why he had not harvested the crop.

Mr. LINEWEAVER. Did this man use pump irrigation?

Mr. HETH. Yes, sir.

Mr. LINEWEAVER. I cannot understand why he would pump more water to waterlog his land, because it costs money to pump, does it not?

Mr. HETH. Well, sometimes the early frost gets you, too.

On the matter of needing this land for further production, technological advance, according to the Department of Agriculture, is keeping ahead of the increase in population. If not, why are we paying subsidies on all of these crops that are being raised?

I understand that there was a report issued on June 10, 1955, on the public works appropriation bill for the fiscal year 1956. I quote from page 8 of that report, relative to the payments from the Missouri River Basin:

> The large amount of repayment of irrigation projects that must come from the Missouri Basin project power revenues is of principal concern to the committee and it has taken the position that no additional burden should be put on such revenues, at least until completion of the current study of allocation of costs and revision of rates in the basin power program.

Mr. LINEWEAVER. I just make this observation for the record: that subsequent to that report which denied funds for a number of projects in the Missouri Basin—I am not arguing the question, but am just making a statement to complete the record—the House of Representatives yesterday, by a vote of 103 to 65 or something of that kind, reinstated the funds that the committee had denied. What effect that has on that report so far as the House of Representatives is concerned, I am not prepared to comment on, but I just wanted that for the record, Mr. Heth.

The House evidently overrode the Public Works Subcommittee, but that is neither here nor there.

At this point, and I have spoken to the Chairman about it, on page 139 of the report on the Ainsworth unit, March 1955, there appears this paragraph:

> The Ainsworth unit is an integral component of the comprehensive Missouri River project. A payout analysis of the Missouri River Basin project as a whole discloses that there are sufficient basinwide net revenues to pay all reimbursable costs, including those of the Ainsworth unit, in a period of time well within the useful life of the works.

I spoke to the acting chairman, and we were directed to formally request the Department of the Interior for the analysis to which they referred in here.

There is a question that regardless of what the House did, Mr. Heth, because of the language in that report, it does raise a question that has already been raised in this committee as to the Missouri River Basin power revenue reservoir, and it is that question that you cited there to which the committee desires the Department and the Bureau of Reclamation to come up with an analysis on that that will answer the question.

Mr. HETH. Just a moment, sir. I am looking for a reference on it.

I would like to quote from the report of the Missouri Basin Survey Commission of 1953, sometimes referred to as the Lawrence report, on page 99:

> The total cost of irrigation and power ranges from $4.2 billion to $4.7 billion, depending on whether Bureau or corps allocation are used. This is a difference of nearly a half billion dollars in the reimbursable account. Annual payments and revenues are estimated at $57 million (for that period in which both irrigation and power payments are made). This compares with an annual cost of construction ranging from $116 million to $130 million (depending on allocations) or annual returns may range from 37 to 49 percent of annual costs of construction, depending on how long beyond the 50th year irrigation payments run and what costs are finally allocated to irrigation and power.

This is on page 100.

> Annual payments on irrigation costs of construction are estimated at $22 million annually for the period that contracts run. If payments are made for a period less than the full life of the project, the annual value of the payments would be less. Direct benefits on farm from irrigation are estimated at $18 million, and indirect benefits of farm come to $132 million, making a total of $213 million. There is also a considerable spread among costs, benefits, and repayments in the case of irrigation.
>
> The estimate of cost of power construction ranges from nearly $1 billion to nearly $1⅔ billion depending on whether or not the additional $314 million allocated by the corps is included and the three to four hundred million dollars of cost is transferred to irrigation by the Bureau. Consequently, the annual cost of power construction ranges from $26 million to $45 million, 2½ percent interest, 100-year life. Legislation requires that rates be set high enough to retire cost of construction within 50 years at 3 percent interest. Hence this calculation was also made. Under these conditions, the annual cost of power construc-

tion ranges from $37 million to $64 million. This compares with annual net revenues of $35 million which are available to be applied on cost of construction.

I submit that it does not look like, from that, that even with a readjustment of figures, you could find a profit.

Now for the final matter, this one of diversion. They talk about the general Niobrara Basin. The statutes of Nebraska do not even mention basin, or even watersheds. The statutes of Nebraska, section 46–206 of the Revised Statutes of 1943, with amendments, provides as follows:

> The water appropriated from a river or stream shall not be turned or permitted to run into the waters or channel of any other river or stream than that from which it is taken or appropriated, unless such stream exceeds in width 100 feet, in which event not more than 75 percent of the regular flow shall be taken.

I do not believe anywhere is it contended that the Snake River is over 100 feet wide.

We have another section dealing with the matter of return of water, of excess water, by irrigation districts. That is 46–265. In part it is as follows.

It is quite long and I quote only the part pertinent:

> The owner or owners of any irrigation ditch or canal shall carefully maintain the embankments thereof so as to prevent waste therefrom and shall return the unused water from such ditch or canal with as little waste thereof as possible, to the stream from which such water was taken.

I call attention to the fact there that it uses the word "stream," and "stream" also has been defined by the courts of Nebraska.

That is set out in the case of *State ex rel. Crandall* v. *Eickhoff* (98 Nebr. 739, 154 Northwestern 246, in which the court said:

> A stream is defined in the Century Dictionary as " a course of running water, a river, rivulet, or brook."

Then they go on in that opinion with further definitions of the stream.

There are other sections of the statute, 46–156, that requires that the excess water be returned to the stream from which its canal is taken.

Reference was made to the Osterman case. That was the last pronouncement of the Supreme Court of Nebraska on the matter of diversion, in 1936. Three times since then has the Legislature of Nebraska been asked to change our diversion law to permit the taking of water from one watershed or stream to another, and three times that bill has been defeated in the legislature. The last time, in 1953, the bill was so soundly defeated that the proponents of that theory of legislation announced publicly in the press that they would no longer seek such legislation, but would turn to pump irrigation to take care of the land.

So our people in Nebraska may be considered crazy by the rest of the United States since we are about the only State left with such law, but it is the law of the State of Nebraska.

As I understand the statutes of the United States, the laws of the State involved must be followed. That refers to 43 United States Code Annotated, section 383, which provides that nothing in the sections dealing with irrigation shall be construed as affecting or intended to affect or in any way interfere with the laws of any State

or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, and so forth.

Mr. LINEWEAVER. Have you concluded your discussion of the State law proposition?

Senator MILLIKIN. I did not hear what you said, Mr. Lineweaver.

Mr. LINEWEAVER. I asked the witness if he had concluded his discussion of the State law proposition.

Senator MILLIKIN. What is the substance of his testimony?

Mr. HETH. That the Osterman case did provide that they could not take water from one stream to another. They mention watershed, but the decision is based on stream, not watershed, and the statutes all refer to stream, not watershed.

It says that the water taken from the stream must be returned to the stream from which it was taken.

Niobrara does not start where the Snake flows into it. The Niobrara is a separate stream, and the Snake is a separate stream. So they must return that water to the Snake River.

In the Osterman case there was cited California law, because the law they referred to in California was the law of California when the decision was made. That law was subsequently changed, but our courts held that it was applicable in this case.

And the Anaheim Water Co. case is one so squarely in point that we question why they would expend further money on this until they submitted a brief or checked the law to find out whether they could do this.

If I may show you a map, sir, the Niobrara River is in red, the Snake River is in green, the canal is in blue.

The Snake flows into the Niobrara; they take the water out of the Snake, follow the blue canal down beyond the edge of the map, and it would return to the Niobrara down here [indicating].

In this Anaheim case there was the Santa Ana River, which is the blue line on the back of the map, and the Chino Creek is listed in red, the Mill Creek in Green, and the drainage ditch in question in black.

There was a man below the drainage ditch between the diversion ditch and the mouth of Chino Creek who had riparian land. Someone above him put in this diversion ditch, carried the water up, and there was a very low divide between Mill Creek and Santa Ana River; he carried the water up over that divide, used it to irrigate land along Mill Creek. The water returned, the excess water, into Mill Creek, thence into Chino Creek, and then into the Santa Ana River.

The people who diverted the water argued the very question that is presented here, that it was not diversion to take the water from Santa Ana River and dump it into Mill Creek, thence via Chino Creek back to Santa Ana River, because it was in the same watershed.

But the California court said that you cannot transport it beyond the diversion and empty it into another stream. They strictly held that Mill Creek was a separate stream from Santa Ana River, that Chino Creek was a separate stream from Santa Ana River, and they made them close up their ditch.

Senator MILLIKIN. Did they reconcile the diversions that California makes from the Colorado River, where it transports it from that stream basin into entirely different stream basins?

Mr. HETH. As I say, this decision was 1907, and since that time the law was changed, permitting the transdiversion. But in the Osterman case, our supreme court reconciles our law with the California law at that time.

Senator MILLIKIN. You are making a point that this project is invalid because it involves the transportation from one stream system to another?

Mr. HETH. That is right, sir.

Senator MILLIKIN. Let me suggest that we have a lawyer look into that and get us an opinion on it.

Mr. LINEWEAVER. Yes, sir. We will get an opinion from the Department on that, too.

Mr. HETH. I will be pleased to submit what we have on it for your counsel.

We have briefed the matter and will be glad to submit it to your counsel for their reference.

Senator MILLIKIN. We will be glad to have anything you wish to submit.

Mr. LINEWEAVER. May I ask you this question, Mr. Heth: Have you any comment to make on the opinion of the attorney general cited by Mr. Smith?

Mr. HETH. I am afraid it could not be published, sir. That opinion spent about three pages quoting from the report of the Bureau of Reclamation. It spent a short paragraph that they had read the Osterman case and did not think it was diversion in this instance.

Senator MILLIKIN. Could I ask, is the witness who preceded this gentleman still in the room?

Mr. SMITH. Yes.

Senator MILLIKIN. Has any engineer given the opinion that the dam would not hold water?

Mr. SMITH. Not to my knowledge at all. We have relied entirely upon the Bureau of Reclamation.

Senator MILLIKIN. Thank you very much.

Mr. SMITH. May I make one further comment?

Senator MILLIKIN. Yes, go ahead.

Mr. SMITH. Mr. Heth has discussed the Osterman case. The man who wrote the opinion for the attorney's office helped try the Osterman case in 1936, in North Platte, and is very familiar with the contents of the case.

Let me quote one paragraph:

> It follows, therefore, under the established policy of the State, water for irrigation and power purposes taken from the Platte River or its tributaries may not be lawfully diverted over and beyond the southern watershed of that stream and applied to lands situated without the basin of the Platte River.

The Osterman case does not talk about streams; it talks about watersheds. I wanted to point that out.

I do have with me a copy of the attorney general's opinion issued to our department of roads and irrigation which I will be glad to file with the committee.

Senator MILLIKIN. We will be glad to have it.

Mr. LINEWEAVER. I think that should go into the record, Mr. Chairman.

Senator MILLIKIN. We will be glad to have it, and we will put it into the record.

(The document referred to follows:)

DECEMBER 27, 1954.

Re Ainsworth Unit.

Mr. DAN S. JONES,
Chief, Bureau of Irrigation, Water Power and Drainage,
Lincoln, Nebr.

DEAR MR. JONES: An examination of the report of the United States Department of the Interior, Bureau of Reclamation, on the Ainsworth unit disclose that the proposed "unit" will divert a portion of the water presently flowing from the Snake River directly into the Niobrara, and by the proposed diversion carry the water to a reservoir by a constructed canal toward the east and there to be utilized for the purpose of the project. Thereafter the surplus will be returned to the Niobrara River.

In this connection we call your attention to certain portions of the report of the Bureau of Reclamation.

The Snake River empties into the Niobrara River, to which the irrigation return flows will naturally find their way back to the Niobrara. See page 8 of Bureau of Reclamation report, where it is said:

"* * * This assumption is predicated upon the fact that the Snake River empties into the Niobrara River to which the irrigation return flows will naturally find their way and thus be in the same location within the State as though they had never been diverted."

Relative to existing water rights, we call your attention to the following quotation from the report, pages 56, 57, and 58:

"EXISTING WATER RIGHTS

"Present irrigation and power developments within the Niobrara River Basin include the Mirage Flats project, supplied with irrigation water stored in Box Butte Reservoir, and five small hydroelectric powerplants which are owned and operated by the Consumers Public Power District of Nebraska. Storage of the waters of the Snake River in Merritt Reservoir for use in irrigating the project lands included in the Ainsworth unit would not infringe upon the water rights of the Mirage Flats project because the storage reservoir for this project is on the Niobrara River over 100 miles upstream from the confluence of the Snake and Niobrara Rivers. Three of the existing powerplants, Minnechaduza, Ainsworth, and Long Pine, are located on tributaries of the Niobrara and would not be adversely affected by the construction of a dam and reservoir on the Snake River which is also a tributary of the Niobrara. Power generation at the remaining two plants which are located on the Niobrara River downstream from the confluence of the Snake and Niobrara Rivers will be affected by the construction of Merritt Dam and Reservoir.

"Present irrigation water rights for the area above Merritt Dam will not be affected by the construction of the new dam and reservoir as the point of diversion for these rights is several miles upstream from the upper extremity of Merritt Reservoir. Depletions of the flow of the Snake River resulting from the diversion of water were taken into account in determining the water-storage potential of Merritt Reservoir and it was found that the inflow to the reservoir after upstream depletions would be adequate to meet the water requirements of the Ainsworth unit.

"There are no existing water rights on the Snake River below Merritt Dam site. On the Niobrara River downstream from the confluence of the Snake and Niobrara Rivers there are provisional grants for 15.85 second-feet of irrigation water and 2 other provisional grants for 1,600 and 2,000 second-feet of water for the generation of hydroelectric power. Table 13 lists the probable active water rights above and below Merritt Dam site. The depleted flow in the Niograra River will be more than sufficient to meet the needs of the 15.85 second-feet of presently active irrigation rights plus the needs of private irrigation rights that could conceivably be applied for in the foreseeable future.

"Storage of water in the Merritt Reservior will interfere with power generation at the Niobrara plant just east of Valentine. The extent of power interference at this plant will vary from season to season according to the load requirements of the plant and operating conditions at Merritt Reservoir. A provisional grant gives this plant the right to use 1,600 second-feet of water from the Niobrara River for power generation. For the greater part of the year the flow of the river is less than the 1,600 second-foot water right. Only at times when floods

occur does the river's flow equal or exceed 1,600 second-feet. The plant is seldom able to utilize the entire flow of the Niobrara River because of extensive leakage through the dam and flashboards, and the occurrence of periodic uncontrolled spills over the top of the flashboards. The capabilities of the two turbines also somewhat restrict the full utilization of occasional high or flood flows. Installed capacity of the Niobrara plant is 980 kilowatts.

"The Spencer plant is on the Niobrara River about 90 miles due east of the Niobrara plant. Alteration of the flows of the Snake River would also infringe upon the vested rights of the Spencer plant for the use of water for power generation. This plant has 2 provisional grants, totaling 2,000 second-feet, which exceed the normal flow of the river at the plant (1,200 second-feet) by about 800 second-feet. Although the Spencer plant more closely approaches full utilization of the available water supply than the Niobrara plant, considerable water is still lost at the Spencer plant by seepage through and around the dam, from leakage around the gates and stoplogs, and from uncontrolled spills over the top of the gate and stoplog sections. Inspection of records showing past operations for this plant indicate that controlled spills or releases were made from the reservoir for rather lengthy periods. In addition the capabilities of the two turbines somewhat restrict the full use of water in the river during high flows or flood flows. The installed capacity of the Spencer plant is 2,640 kilowatts."

Relative to the matter of watershed diversion, we call your attention to a further portion of the report on page 60:

"In developing the plan for the Ainsworth unit it was assumed that the proposed movement of water from the Snake River would not constitute diversion within the meaning or intent of the Osterman decision. This assumption is predicated upon the fact that the Snake River empties into the Niobrara River to which the irrigation return flows will naturally find their way and thus be in the same location within the State as though they had never been diverted."

Relative to the question of diversion which is raised in the report, we refer you to *Osterman* v. *Central Nebraska Public Power and Irrigation District* (131 Nebr. 356, 268 N. W. 334).

This lengthy and well-considered opinion came as a result of an extensive trial and numerous briefs before the Supreme Court. The pertinent portions of this opinion to the present problem are herewith quoted:

"Waters: Section 46–132, 46–501, 46–502, 46–504, 46–507, 46–508, and 46–620, Comp. St. 1929, construed together, with reference to the facts in the instant case, and *held* to be mandatory regulations governing irrigation, which in effect limit the location and construction of irrigation canals and ditches, as well as the lands irrigated by the same, to the basin containing the source of the water used, and to require that all unused waters shall be returned to the stream from which diverted; that these principles thus legislatively declared constitute the controlling public policy of the State in the conservation of the public waters and in the protection of public interest.

"* * *

"* * * This necessitates the further conclusion that at common law there was in general no right to transport waters beyond or over the *divide* or *watershed* that inclosed the source from which obtained. [Emphasis supplied.]

"* * *

"It follows, therefore, that under the established policy of this State, water for irrigation and power purposes taken from the Platte River or its tributaries may not be lawfully diverted over and beyond the southern watershed of that stream and applied to lands situated without the basin of the Platte River; * * *."

We feel that a careful reading of this opinion must of necessity lead to the conclusion that the Nebraska Supreme Court intended only to prohibit trans-watershed diversion.

Under the facts as disclosed by the report, part of which are above pointed out, the unit under consideration cannot be construed to contemplate trans-watershed diversion.

The Snake River originally emptied into the Niobrara. In fact, a portion of it will still empty into the Niobrara. That portion which is being utilized for the proposed project is still in the same watershed and after it has served its purpose will eventually find its way back to the Niobrara.

Consequently the downstream appropriators' and users' rights can in no way be prejudiced.

The above comments, of course, are subject to our State laws protecting riparian rights and those rights of prior appropriators.

Very truly yours,

CLARENCE S. BECK,
Attorney General.
ROBERT V. HOAGLAND,
Assistant Attorney General.

Mr. HETH. I could go on further about the case, but if your legal department is going to check it, I do not feel that it is necessary here. You will have the opinions.

Senator MILLIKIN. All right.

Mr. LINEWEAVER. We will be glad to have any comments, sir, or any information, so that we can submit it to the counsel. That also pertains to you, Mr. Smith.

We will be glad to have any comments or information for the benefit of the counsel or the Department.

Mr. SMITH. I might add here that I think the question of diversion is a State problem, coming under the laws of the State of Nebraska, and so far our water rights filed have been accepted and there has been no rejection of them.

If there is to be anything on that, I feel it will have to be litigated in the State courts in the State of Nebraska.

Senator MILLIKIN. You send any memorandum that you may wish to directly to the committee and we will put it into the record and submit it to a counsel to look into it.

Will you do that?

Mr. HETH. We will be glad to do that, Mr. Chairman.

(The information subsequently submitted is as follows:)

LINCOLN 8, NEBR., *June 20, 1955.*

In re Ainsworth irrigation project (H. R. 5749).

SENATE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Senate Office Building, Washington, D. C.
(Attention: Mr. Lineweaver.)

GENTLEMEN: Our correspondent counsel, Mr. Lynn Heth, who appeared in opposition to the Ainsworth irrigation project, requested that we forward to you a memorandum on two legal points.

Therefore, we are enclosing a memorandum dealing with the legality of the diversion under the law of Nebraska and the legality of construction of any works by the Bureau of Reclamation.

If we can be of any further assistance, please do not hesitate to call upon us.

Sincerely yours,

BEGHTOL, MASON AND ANDERSON,
By ROGER V. DICKESON.

MEMORANDUM

A diversion of water by Ainsworth irrigation district from the Snake River, a river having a stream less than 100 feet in width, at a point in Cherry County, some 14 miles upstream from its confluence with the Niobrara River, and transporting it by canal out of the watershed of the Snake River, in an easterly direction some 52 miles across the watersheds of Gordon, Schlagel, Evergreen, Rush, Dry, Plum, and Bone creeks (all tributaries of the Niobrara), for the irrigation of agricultural lands in Brown County in the watersheds of Bone, Long Pine, and Plum creeks (tributaries of the Niobrara) is prohibited by the law of Nebraska.

The Nebraska law on this point is both from the statutes and from the cases. The applicable statutes are as follows:

"R. R. S. 1943, 46-206. Appropriation; water to be returned to stream. The water appropriated from a river or stream shall not be turned or permitted to run into the waters or channel of any other river or stream than that from which

it is taken or appropriated, unless such stream exceeds in width one hundred feet, in which event not more than seventy-five percent of the regular flow shall be taken."

"R. R. S. 1943, 46–265. Embankments; maintenance; return of unused water; duties of owner. The owner or owners of any irrigation ditch or canal shall carefully maintain the embankments thereof so as to prevent waste therefrom, and shall return the unused water from such ditch or canal with as little waste thereof as possible to the stream from which such water was taken, * * *"

"R. R. S. 1943, 46–156. Limitation on debts and liabilities; eminent domain; procedure; contracts with United States. * * * (2) Any irrigation district organized under the provisions of sections 46–101 to 46–128 shall have power to and it shall be its duty to provide for the proper drainage of any and all lands embraced within its limits which are or have been subirrigated by reason of the lawful use of water from its canal by the owner or lessee of the lands subirrigated or from any cause not the fault or by the consent of such owner or lessee. For such purpose such district shall have all the authority herein granted for levying special assessments or otherwise providing funds necessary to properly drain such lands, entering upon lands for the purpose of making surveys, exercising the right of eminent domain, contracting for the construction of necessary ditches, and further shall have the right to extend such drainage ditches outside of the limits of such district for the purpose of conducting the drainage water to other lands upon which the same may be lawfully used or to return the same to the stream from which its canal is taken. * * *"

It is our understanding that the Snake River at the point of proposed diversion is between 40 and 60 feet wide. Therefore, any diversion which did not propose to return the waters to the Snake River would be in violation of R. R. S. 1943, 46–206.

The case of *Osterman* v. *Central Nebraska Public Power District* (131 Nebr. 356, 268 N. W. 334 (1936)), is the leading Nebraska case on transwatershed diversion. The case has stood since 1936 without modification by the supreme court and in the face of three legislative attempts (1941, 1947, and 1953) to change it by the Nebraska State Legislature. The Osterman case involved an appeal from a special statutory proceeding before the Department of Roads and Irrigation of Nebraska. The Nebraska Supreme Court was called upon to review final orders granting to the public power district allowance of water rights. The supreme court narrowed the issue presented to it for decision to the single controlling question of the right of the district to transport waters of the Platte River through and across the divide or watershed which separates the Platte River system from the basins of the Blue and Republican Rivers (both tributaries of the Kansas River and constituting a part of its system) and to irrigate lands with that water situated wholly outside the Platte River Valley and beyond the watershed thereof.

In Osterman, the Nebraska Supreme Court held that water for irrigation may not be taken from the Platte and diverted beyond the southern watershed of that stream and applied to land situated outside the watershed of the Platte. The Nebraska Department of Roads and Irrigation was held to be "wholly without authority to grant applications." The orders of that department were "set aside, annulled, and revoked, and the cause remanded."

In its opinion, the court in Osterman went into the background of common-law water rights and concluded that the common-law riparian rules still controlled and were in force in every part of Nebraska except as modified by statutes. The court reached this conclusion with regard to the use of water at common law:

"The language of the above rule necessarily implies that the right to use water at common law is limited strictly to riparian lands. This is in accord with the weight of authority (3 Farnham, Waters and Water Rights, p. 1902). This necessitates the further conclusion that at common law there was in general no

right to transport waters beyond or over the divide or watershed that inclosed the source from which obtained" (131 Neb. at 366).

The district raised the contention that statutes now permitted the diversion of water from one watershed to another. The court stated, "In the light of legislative history, we are unable to agree with this contention" (131 Neb. at 366). The court commented on R. R. S. 46–206 as follows:

"Section 6 of the same article is as follows:

"'The water appropriated from a river or stream shall not be turned or permitted to run into the waters or channel of any other river or stream than that from which it is taken or appropriated.'

"This has been said to have been adopted from California. It appears at the time of the enactment of this statute the law in California on this subject was substantially that, while the use of waters of streams for irrigation is permitted, the riparian proprietor is recognized as having the superior right, and the waters are not permitted to be diverted by the irrigators beyond the watershed; but the surplus is to be returned to the original stream (1 Wiel, Water Rights, p. 849; 1 Kinney, Irrigation, p. 782; 2 Farnham, Waters and Water Rights, p. 1572; 3 Farnham, Waters and Water Rights, p. 1903; *Wiggins* v. *Muscupiabe Land & Water Co.*, 113 Cal. 182, 45 Pac. 160; *Bathgate* v. *Irvine*, 126 Cal. 135, 58 Pac. 442; *Southern California Investment Co.* v. *Wilshire*, 144 Cal. 68, 77 Pac. 767; *Anaheim Union Water Co.* v. *Fuller*, 150 Cal. 327, 88 Pac. 978; *Clark* v. *Allaman*, 71 Kan. 206, 80 Pac. 571; *Watkins Land Co.* v. *Clements*, 98 Tex. 578, 86 S. W. 733; *Matagorda Canal Co.* v. *Markham Irrigation Co.*, 154 S. W. (Tex. Civ. App.) 1176).

"It is obvious, in view of the source of the enactment, and the express terms of section 6, art. 1, that the act of 1889 in no manner authorized the conveyance of waters over and beyond the watershed for the purpose of irrigation" (131 Neb. at 366, 367).

The Court then commented on R. R. S. 46–265, as follows:

"SEC. 59. 'The owner or owners of any irrigation ditch or canal shall carefully maintain the embankments thereof so as to prevent waste therefrom, and shall return the unused water from such ditch or canal with as little waste thereof as possible to the stream from which such water was taken or to the Missouri river.'

"It is obvious that section 59 quoted, which is now section 46–620, Comp. St. 1929, is not amendatory of section 6, art. 1, ch. 69, Laws 1889, as amended in 1893 (now section 46–508, Comp. St. 1929), but is to be regarded as part of the act of 1895, complete within itself, and having the force and effect of an additional regulation for the construction, maintenance and operation of irrigation canals. It is also obvious that the words 'or to the Missouri river' can have no application to the issue to be determined in the instant case. So, also, as concerns section 42 (now section 46–502) and section 43 (now section 46–504), as well as section 46–508, the controlling principle of construction is: 'In accordance with the principle that the last expression of the legislative will is the law, in case of conflicting provisions in the same statute, or in different statutes, the last in point of time or order of arrangements prevails' (59 C. J. 999).

"It follows that performance of the conditions imposed by section 46–620, Comp. St. 1929, is expressly made mandatory in the operation of all irrigation ditches, and in addition its requirements prescribe a necessary, practical limitation to the extent that water may be removed from the source of supply. Water unconfined will not run up hill. The divide or watershed must therefore not be crossed by an irrigation ditch or canal and the waters applied to lands whose situation is such that prevents the unused waters from being returned to the source from which they were taken. In fact, section 46–620 was in effect a substantial reenactment of section 6, art. 1, ch. 69, Laws 1889, because it is inconceivable that its prohibitions would ever be applied to any but unused waters. It is quite obvious that the legislative intent in both enactments was to preserve the unused waters for the benefit of the source from which obtained. These statutes are more than mere arbitrary commands. They evidence reason and purpose. They establish public policy on the subject of irrigation. Courts will consider the purpose of a statute as a whole, and seek to carry out, and not defeat, such purpose. *School District of Omaha* v. *Gass*, *ante* (p. 213, 267 N. W. 528)." (131 Neb. at 368, 369.)

The Court then commented on R. R. S. 46–156, as follows:

"Section 46–132, Comp. St. 1928, empowering irrigation districts to provide for drainage of lands embraced within their limits which are or have been subirrigated, and to return such drainage waters to the stream from which its

canal is taken, in event the same are not again used for irrigation, is obviously another example of the legislative recognition of the established policy of the state.

"It is manifest, therefore, that section 46–620, Comp. St. 1929, construed in connection with section 46–508, as an express regulation governing the operation of irrigation canals and ditches, necessarily implies such location and construction of the matters regulated as will enable a full performance of the requirements specifically directed. This, as a practical matter, in view of existing conditions, necessarily limits the location of the canals to within the watershed of the stream that furnishes the source of supply" (131 Neb. at 369, 370).

The cases and authorities cited in the Osterman opinion and included in the above quotation all hold to the effect that diverted water from a stream can only be used on riparian land and that riparian land is restricted to that land which drains back into that particular stream. The case of *Anaheim Union Water Co.* v. *Fuller* (150 Cal. 327 88 Pac. 978 (1907)), cited with approval in the Osterman opinion (131 Neb. 367), is particularly significant in view of the proposed Ainsworth project diversion and the erroneous conclusions of law reached by the Bureau of Reclamation in its report of December 1954.

In Anaheim, plaintiffs had sued to enjoin the defendants from diverting water from the Santa Ana River. Defendants owned land on the Santa Ana River above the plaintiffs. Defendants diverted water from the Santa Ana and used it to irrigate lands which were not riparian to the Santa Ana River. A tributary of the Santa Ana, known as Chino Creek, entered the Santa Ana below the land of the plaintiffs. Chino Creek had a tributary known as Mill Creek which entered Chino 1½ miles above the confluence of Chino with Santa Ana. It was a finding of fact of the trial court that the land irrigated with water by the defendants was beyond the divide of the Santa Ana and wholly within the watershed of Mill Creek. The unused waters were drained into Mill Creek which flowed into Chino Creek, which ultimately flowed back into the Santa Ana from whence it had originally been diverted. The defendants appealed the finding of the trial court in favor of the plaintiffs. The reasoning of the California court in regard to watershed diversion is to be found at 88 Pacific 980:

"* * * Land which is not within the watershed of the river is not riparian thereto, and is not entitled, as riparian land, to the use or benefit of the water from the river, although it may be part of an entire tract which does extend to the river. *Chauvet* v. *Hill* (93 Cal. 410, 28 Pac. 1066); *Bathgate* v. *Irvine* (126 Cal. 135, 58 Pac. 442, 77 Am. St. Rep. 158); *Southern Cal. I. Co.* v. *Wilshire* (144 Cal. 68, 77 Pac. 767); *Watkins L. Co.* v. *Clements* (98 Tex. 578, 86 S. W. 733, 70 L. R. A. 964, 107 Am. St. Rep. 653).

"The defendants claim that these findings are contrary to the evidence, and that this rule does not apply to the land they seek to irrigate, because, while it is wholly within the Mill Creek watershed, it is also within the general watershed of the Santa Ana River, considered as an entirety including the valley from its source to its mouth. This fact does not affect the case, at least so far as the land of the plaintiffs is concerned. The principal reasons for the rule confining riparian rights to that part of lands bordering on the stream which are within the watershed are that, where the water is used on such land, it will, after such use, return to the stream, so far as it is not consumed, and that, as the rainfall on such land feeds the stream, the land is in consequence entitled, so to speak, to the use of its waters. Where two streams unite, we think the correct rule to be applied, in regard to the riparian rights therein, is that each is to be considered as a separate stream, with regard to lands abutting thereon above the junction, and that land lying within the watershed of one stream above that point is not to be considered as riparian to the other stream. The fact that the

streams are of different size, or that both lie in one general watershed, or drainage basin, should not affect the rule, nor should it be changed by the additional fact that the two watersheds are separated merely by the summit or crown of a comparatively low table land, or 'mesa,' as it is called in the evidence, and not by a sharp or well-defined ridge, range of hills, or mountains. The reasons for the rule are the same in either case. In some cases it may be difficult to distinguish the line of separation. This seems to have been a case of that sort. Nevertheless, we think there is evidence sufficient to support the finding of the court that there is a dividing line between the two watersheds, and that the land irrigated by defendants lies upon the slope which descends into Mill Creek. * * *"

The conclusion that follows from the Anaheim case is this: If it was contrary to riparian law to divert water from the Santa Ana River and use it outside the watershed, or across the divide of the Santa Ana, even though it was ultimately returned to the Santa Ana via tributary creeks, it is most certainly contrary to riparian law to divert water from the Snake, take it across the divide of the Snake, and return it to another river (the Niobrara) entirely.

Therefore, the diversion proposed for the Ainsworth project is contrary to the existing Nebraska statutes and Nebraska case law. It is not believed that the Nebraska supreme court will alter its position in view of the refusal of the Nebraska State Legislature on three occasions to change the law of the Osterman case.

MEMORANDUM

Since the proposed diversion and utilization of water from the Snake River is contrary to the laws of the State of Nebraska, no irrigation or reclamation works can lawfully be constructed by the Secretary of the Interior under the authority of the United States.

That the proposed diversion and transportation is contrary to the statute and case law of Nebraska is taken as established from the preceding section. This illegality operates to prohibit the Secretary of the Interior from proceeding with the construction of the diversion and transportation works.

Whatever rights the United States or its Secretary of the Interior may have to divert water from a stream and utilize it for agricultural irrigation purposes is determined and controlled by State law—the law of Nebraska in this instance. *California-Oregon Power Co.* v. *Beaver Portland Cement Co.* (295 U. S. 142 (1935)); *United States* v. *Humboldt Lovelock Irr. L. & P. Co.* (97 F. 2d 38 (9th Cir., 1938)); *Rank* v. *Krug* (90 F. Supp. 773 (S. D. Cal., 1950)); and see *Ide* v. *United States* (263 U. S. 497 (1924)). In the case of *Rank* v. *Krug*, *supra*, it is stated that,

"* * * The Supreme Court and Congress have been consistent in leaving the question of property in water rights to be determined by and under local state law except in so far as Congress may exercise its Constitutional power to regulate navigable waters, or for flood control under the Commerce Clause, article 1, sec. 8, cl. 3" (90 F. Supp. at 786).

In *United States* v. *Humboldt*, supra, it is stated that, "whatever rights appellant [United States] may have and the extent thereof must be determined by the law of Nevada" (97 F. 2d at 42).

The right of the State to control the diversion and use of stream waters for agricultural purposes has been clearly recognized by the Congress, and it has enjoined the Secretary of the Interior to proceed in any irrigation reclamation project only in conformity with State law.

"Nothing in sections 372, 373, 381, 383, 391, 392, 411, 416, 419, 421, 431, 432, 434, 439, 461, 491 and 498 of this title shall be construed as affecting or intended to affect or to in any way interfere with the laws of any State or Territory relating to the control, appropriation, use or distribution of water used in irrigation, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of such sections, shall proceed in conformity with such laws, and nothing in such sections shall in any way affect any right of any State or of the Federal Government or of any landowner, appropriator, or user of water in, to, or from any interstate stream or the waters thereof" (32 Stat. 390, 43 U. S. C. A. sec. 383).

Therefore, it is concluded that no agency of the United States can lawfully proceed to construct a diversion or transportation works for the proposed Ainsworth project. Any attempt to proceed in any way with such construction is in violation of the constitutional powers granted the United States and, in addi-

tion, is contrary to both case and statutory law of the United States and the State of Nebraska.

From this, the further conclusion is reached that an attempt of either the Ainsworth Irrigation District or the Bureau of Reclamation, or the two agencies working in conjunction, to proceed by way of eminent domain to condemn land for the transportation canal would be an abuse of sovereign power and subject to injunctive restraint. (See Annot. 133 A. L. R. 1–175.) Nor could the United States assert a reserved right-of-way under 26 Statute 391 (43 U. S. C. A. 945) for an irrigation canal for an unlawful and unauthorized purpose. See *Ide* v. *United States* (263 U. S. 497 (1923)) and *Griffiths* v. *Cole* (264 Fed. 369 (D. Ida., 1949)).

Senator MILLIKIN. What about the preceding gentleman I just talked to?

Mr. SMITH. I did not quite hear you, sir.

Senator MILLIKIN. Will you submit any memorandum that you have on the point for the record?

Mr. SMITH. Yes.

Senator MILLIKIN. All right.

(The information subsequently submitted is as follows:)

UNIVERSITY OF NEBRASKA,
CONSERVATION AND SURVEY DIVISION,
Lincoln, Nebr.

Mr. W. C. SMITH, Jr.,
Attorney at Law, Ainsworth, Nebr.

DEAR MR. SMITH: In answer to your inquiry of June 10 as to whether any part of the university has made "extensive geologic subsurface studies by core drilling" in Cherry County:

The conservation and survey division of the university is the only office of the university that has or has had any equipment capable of test drilling in the State and our office has not done any test drilling or core drilling in Cherry County, Nebr.

We have made studies of all of the tests drilled for oil and gas in Nebraska and about a dozen of these are located in Cherry County. However, the records of these oil and gas test wells are very poor in the upper few hundred feet until after they have set and cemented surface casing.

Our office has also completed a soil survey of Cherry County which is now in the process of being published.

In addition, the outcropping surficial geologic formations in Cherry County have been studied by a number of people working for our division including Dr. A. L. Lugn, who prepared a surficial geologic map of this area as a result of fieldwork done during the summer sessions prior to 1938 and probably about 1934 and 1935.

Yours very truly,

E. C. REED, *Director.*

Mr. HETH. I meant to say this is a matter that has not been brought out, but may be brought out, because I understand you may question the Bureau men further, that our people have ordered them to stay off the land. Notwithstanding this, notices have been served on them that the Bureau intends to exercise this right-of-way for ditches or canals.

We contend that that right of way exists only for a legal project, that the Bureau or even the United States could not enter in there on a project that was illegal. Since the State law must be recognized, we contend that they cannot divert water, therefore the canal itself would be illegal, and we deny them the right on the land.

It is not that we think they are bigger than the United States. We think we have rights, and we only want to protect those rights.

Senator MILLIKIN. Has that point been briefed?

Mr. HETH. Which point?

Senator MILLIKIN. The point you have just made, has that been briefed?

Mr. HETH. I understand that our cocounsel in Lincoln has. I do not have it.

Senator MILLIKIN. If there is a brief on it, will you send it?

Mr. HETH. Yes, sir.

Senator MILLIKIN. Thank you.

Mr. HETH. It is not, as I say, that we wish to be mean or ornery. Here is the thing: We would like to get this thing into the Supreme Court of Nebraska. We have tried to do it on the water application. We cannot get any action out of the local Bureau of Irrigation. If we could get some action, get into the supreme court, we would be tickled to death, and it would save us expense, and it would save the United States Government expense, because sooner or later we are going to be there. If they would let us in right now, we would let the supreme court settle this question and we would either be in or we would be out.

Senator MILLIKIN. You have a perfect right to make your point.

Mr. HETH. This is a point that has probably been made so often that it may be cluttering the record, but to call attention to these estimates of projects and ultimate costs, such as the North Platte project in Nebraska, started out at $2½ million and wound up at over $19 million.

I do not have before me the Bostwick figures, but I understand that it has gone greatly beyond the original estimate.

The Mirage Flats exceeded the original estimate by over 20 percent. Of course, the Missouri River Basin, we know, has grown by leaps and bounds.

One other point is that in the report they refer to 1,420 acres of fourth land, being land that if irrigated under this project must be irrigated by pumps furnished by the landowners. Mind you, in spite of the fact that they have been working on a report for 3 years, at least they tried to get the project approved on the basis of a prior report, and they still say that they haven't officially contacted those people to find out whether they will join the project.

So if you take out that 1,420 acres, it certainly upsets their cost figures. That is some 4 percent of the land. The average price per acre of this land is $763, taken on their own figures, without considering anything for revisions, failures of estimates, and such as that.

Mr. LINEWEAVER. You mean the cost of the project divided out?

Mr. HETH. Of the project, yes.

Mr. LINEWEAVER. And divided out among the 30,000 acres?

Mr. HETH. That is right, on the 33,960 acres.

Senator MILLIKIN. The landowners, through their irrigation district, will be finally responsible for paying the bill, will they not?

Mr. HETH. About 20-some percent of it, less than 25 percent.

Senator MILLIKIN. I do not quite understand that. Will not the land district be responsible for meeting its contractual obligations to the Federal Government?

Mr. HETH. Yes, sir; depending on what those contractual obligations are. It is costing at $800 an acre for this project.

Senator MILLIKIN. If that is the cost of it, and if the irrigation district is responsible for paying it, and if the people who join the irrigation district or who are in it have the opportunity to vote "yes" or "no," they will have to substitute their own judgment as to whether the land is worth that, is that not correct?

Mr. HETH. As I understand it, it is not set up that way. It is set up that the Missouri River Basin is going to take care of three-fourths of this cost. The land will not carry its own burden. If you give them a maximum of $6.05 an acre repayment, as they state, it will only be some $240 an acre that they will pay back in their 50-year time.

We think that the people of the United States ought to have a little more than that for their money.

I understand there is a great amount of flood control charged to the Missouri River Basin. If there is excess power revenue, that might be applied to pay for that flood control.

We have here a copy of the statement given by Dr. Lugn to the House committee on April 26, 1954. We would like to introduce that as a part of this record.

Senator MILLIKIN. You may do so.

(The document referred to follows:)

FEASIBILITY OF THE AINSWORTH UNIT OF THE NIOBRARA RIVER BASIN DEVELOPMENT

Statement by A. L. Lugn, Lincoln, Nebr.

LOCATION AND GEOLOGY

This entire project is located in the central part of northern Nebraska, south of the Niobrara River. The Merritt Reservoir is to be constructed on the Snake River approximately 25 miles southwest of Valentine, Nebr., in the central-eastern part of Cherry County. Snake River water is to be delivered through a ditch more than 50 miles long to lands in northern and eastern Brown County.

I am in full sympathy with the desires and hopes of the people desiring irrigation in the Ainsworth area, and I regret that the facts are such that I must oppose certain aspects of this project.

The whole project, including the reservoir site, all of the several proposed canal locations, and the land to be irrigated, is underlain by the Ogallala group of formations, the youngest group of deposits spread across the Great Plains from the west before the great ice age (Pleistocene) of repeated glaciations, which affected especially the eastern end of Nebraska and areas to the east. In much of the area of Cherry and Brown Counties, a thin layer or veneer of dune or blow sand covers the Ogallala beds immediately below the surface; and in the area to be irrigated in Brown County, some wind-deposited thin, friable silty loam soils cover the ice age sands and gravels, which rest on Ogallala beds, or the soils lie directly on the Ogallala.

Ogallala formations underlie somewhat more than two-thirds of all of Nebraska, including almost 100 percent of the 20,000-square-mile area in north-central Nebraska known as the Sand Hills. The Ogallala group consists of 4 formations, but only the lower 2 are of importance in connection with the present problem. More or less of the Ash Hollow formation (mortar beds) occurs below the dune and sand or blow sand in Cherry and Brown counties. It consists of discontinuous hard and soft layers of whitish and gray or limy sandstone, Magnesia rock, or grit rock, interlayered with beds or soft, fine, silty sand. Some lenses of fine silt and clay are present in certain local areas.

The hard and soft rim-rock beds which outcrop in the bluffs along the north side of the Niobrara River Valley more or less all the way across Cherry County in the vicinity of Valentine and eastward into Brown County, belong to the lower part of the Ash Hollow formation. The hard ledges, sometimes called the cap-rock, from the Snake River Falls close below the Merritt Reservoir site. These ledges are in the lower part of the Ash Hollow formation, sometimes called the mortar beds. From 50 to as much as 100 feet of the Ash Hollow formation occur under the mantling dune sand in the vicinity of the proposed reservoir and eastward into Brown County (the Ainsworth area) and even into Rock County. The mantle of soft dune sand ranges widely in thickness wherever it is present.

Next below the Ash Hollow mortar beds is the Valentine formation of almost entirely unconsolidated sands and silts, which range in thickness from 175 to 225 feet. A few harder beds of discontinuous extent also occur in the Valentine formation. All of the Ogallala beds as well as similar deposits of older forma-

tions are simply old river sands and silts, which came into existence as sheets of fluvial or river sediments of gravel, sand, silt, and some clay beds, which were the waste and wash eroded by running water from the Rocky Mountains at the west, as those highlands have risen and grown by repeated uplifts out of an ancient sea bottom (Cretaceous period) many millions of years ago.

The Valentine sands of the Ogallala are generally underlain by the Brule formation, consisting mainly of layers of silt and clay, and fine silty sand; and this formation constitutes a more or less impervious but uneven floor on which the younger porous and permeable deposits rest. The Brule clay, so-called, rises fairly high (90 feet) along the Niobrara River east of Valentine, Nebr., under the game preserve area, where it appears as a reddish-pink, hard, claylike material. The upper 12 to 15 feet of this formation at this place is generally a lighter, buff-yellowish color, but it still is quite impervious to water. At still greater depths, the Chadron clay and sandy beds are present below the Brule, and great thicknesses of still older Cretaceous shale are present below the Chadron beds under most of the State.

The Ogallala beds thicken to the south under both Cherry and Brown Counties, and toward the center of the Sand Hills region (for example at Hyannis), other Tertiary formations extend from the west to greatly increase the total thickness of the Tertiary deposits, most of which are water bearing with large capacity for ground-water storage. The Sand Hills region, because of the configuration of the underlying shales and the great thickness of Tertiary deposits, in effect, constitutes a great ground-water basin with a storage capacity estimated to be about 600 million acre-feet. The regional tilt of the country from the west-northwest to east-southeast causes most of this great store of underground water to migrate slowly but steadily to the southeast. However, a subdued but definite ground-water divide is present on this mass of ground water high in the Ogallala beds trending from west to east across Cherry and Brown Counties at the south of the Niobrara Basin. Within this Niobrara River Basin, south of the river, the underflow is in the main to the northeast.

The mantling dune or blow sand over the Ogallala beds has been derived quite directly from the underlying Ogallala. During the later glacial ages, more or less of the hard and soft layers of the Ogallala beds (mortar beds or Magnesia rock) was softened by the solution of the lime cementing materials by downward percolating water, evidence of its high permeability; and then the loosened, fine sands and silts were drifted into a mantle of dune or blow sand throughout the whole of the Sand Hills region, while the finer silts and clay fractions were sifted out of the mixture to become loessial deposits farther east, as the dust of ancient dust storms settled to become the hard, fertile loessial soils of very extensive areas. The mantle of blow sand may be very thin in some places and scores of feet thick at other places. The larger sandhill ridges not uncommonly contain buried, hard cores of Ogallala mortar beds, but actual outcrops are few, as the mantle of dune sand is generally thick and continuous.

Thus, most of Cherry County and also most of Brown County south of the Niobrara River Valley, below the Sand Hills dune sand, is underlaid with Ogallala beds from 200 to 300 feet or more in thickness. The Ogallala group of beds as a whole and also the overlying dune sand are very porous and also highly permeable to water. The porosity may range from 25 to even 50 percent, which indicates their great capacity to take in to contain ground water either in stable storage or in transient storage, and infiltration from precipiation in favorable situations can be 100 percent, even during heavy rains. The hard layers are discontinuous and soft underground and offer but very slight impediment to the movement and underflow of ground water in any direction. They are of slight value in retarding seepage under storage reservoirs or supply canals. The storage capacity of the Ogallala beds ranges from 20 to 40 percent or even more of the bulk volume of the formations.

Some of our very best irrigation wells in Nebraska have been developed in the Ogallala beds in Box Butte County and in some other places, where some deep irrigation wells yield as much as 1,800 to 2,000 gallons of water a minute continuously. Any aquifer or water-bearing bed that can supply water at such a high rate can take in and absorb water equally fast. This is the Ogallala formation, one of our best aquifers. This fact should strongly suggest the great capacity of these Ogallala beds to absorb seepage water from reservoirs and canals. Large areas in the Sand Hills have no surface drainage or runoff of precipitation. It all infiltrates into the dune sand and the underlying Ogallala beds. Later this water reappears from the streambanks as spring and seepage water to be discharged through the streams and rivers of the area. This is

true of many of the ranches in the locality of the proposed site of the Merritt Reservoir. Infiltration of rainfall is actually 100 percent.

It is on the Ogallala beds, as described above, and in the area of high infiltration, also noted above, that it is proposed to construct the Merritt Reservoir. If infiltration into the Ogallala beds is 100 percent from normal precipitation now at the surface of the ground, the rate of infiltration can and will be much greater under a reservoir, when the added hydrostatic pressure of the stored water is applied also to the water table. It seems not only possible but altogether most probable that if this reservoir is constructed, it can never be filled to full capacity (68,800 acre feet), and that it will be impossible to ever store more than a fraction of the capacity of water it is designed to hold. Past experience in several similar situations supports the above conclusion.

STORAGE OF WATER ON PERMEABLE OGALLALA BEDS

The storage of a large volume of water in a reservoir on the Ogallala beds, such as is proposed at the Merritt site (68,800 acre-feet maximum storage), will result in at least two serious consequences. First, large amounts of water will be lost to the underlying formations of the Ogallala group of beds. This loss may be so great as to seriously diminish the volume of water that can be delivered for irrigation. The second effect, will be that the water lost by seepage will most likely elevate the water table in a large area around the reservoir. Since the water table already is high and relatively near to the surface, the effect will no doubt be to flood large areas of present hay meadows and low valley areas. Further, since the water table is now near the surface, it cannot be raised very many feet to steepen the head or gradient on the water table and so increase the discharge of ground water from the area without causing water to impound in the low areas.

The height of water or head to be built up in the Merritt Reservoir is reported to be planned for at least 100 feet of water above the present level of the water table in the area. This will amount to an additional pressure of at least 3 atmospheres, or at least 45 pounds per square inch, on the present water table surface under the reservoir. This additional pressure will increase the potential infiltration locally by 3 or 4 times its present potential, which is large even now.

Seepage will also greatly increase the ground water discharge through springs and seeps along the canyon of Snake River. It will likewise increase the ground water discharge through Gordon Creek from a point east to southeast of the Merritt Reservoir clear to the mouth of Gordon Creek. Further, much lowland between Snake River and Gordon Creek may be expected to become seriously flooded by the rise of the water table, and this effect may even extend somewhat beyond Gordon Creek.

The seepage effect from storage in the Merritt Reservoir noted above is without any contemplated effect of the canal, which it is proposed to extend through the same area. An open canal constructed through unstable dune sand or in or on the Ogallala beds, will lose water by seepage to raise the water table under adjacent lowlands if the canal is constructed in a position that is higher than and above the natural water table. On the other hand, it will drain water from adjoining lands and lower the water table if it is constructed at a level below and lower than the position of the natural water table. It would then function as a drainage ditch. If the canal is entirely and effectively sealed it will have no effect on the water relations of adjoining lands, but it will be difficult to maintain and will be a very costly engineering project in itself. If it is not entirely or effectively sealed, its effect will be the same as if it were not sealed at all, except the effect will vary in degree. Pressures on the concrete where the bottom of the ditch is below the water table, unless the ditch is always full of water, will be great and tend to break up the seal; pressures of 600 to 800 pounds per square foot if the bottom is 10 feet below the static water level. This will be highly destructive and costly to maintain.

EXAMPLES OF STORAGE ON PERMEABLE MATERIALS

The situation and condition for the storage of water were almost the same at the Sutherland Reservoir (Platte Valley Public Power and Irrigation District) as at the Merritt Reservoir location. At the outset, the Sutherland situation seemed better than the Merritt location at present. At the Sutherland location, a fairly thick layer of loessial clay covered the Ogallala beds (Ash Hollow and

Valentine formations), and this layer of clay, from 10 to 40 feet thick, would have provided a more or less effective seal on the porous and permeable Ogallala beds below. However, contrary to advice from geologists, the clay cover at Sutherland was mostly scraped off the Ogallala beds and graded up to form the reservoir embankments. This operation exposed the raw and fresh Ogallala sands and gravels over the entire reservoir site. Both Dr. G. E. Condra and I were told that we need have no concern for this, that it would soon silt up and seal itself as soon as water came to be diverted into the reservoir. This it has not done to date.

Almost as soon as water was stored in the Sutherland Reservoir, seepage began to appear, at first close to the reservoir and in due time in the Platte River Valley, south of the river, clear to the south bluffs and higher into tributary drainages from the south, for as far as 8 to 10 miles down the valley of the Platte. It has been impossible to store much water in the Sutherland Reservoir, and the seepage was not diminished until the height of the water was lowered to not much over a third of the planned storage level. This has reduced the storage capacity of this reservoir to but a small fraction of the originally planned capacity. The Sutherland Reservoir is essentially useless, and it is but little more than a wide place in the ditch. It has silted up a little, but there is no evidence that it has sealed itself at all. Attempts have been made to increase the storage, but whenever this has been done and the level of the water has risen a few feet above the customary low level, seepage again immediately appears.

The supply canal, which extends from the Sutherland Reservoir to the regulating reservoir at North Platte (south of the river) was developed in and on dune sand in part and mostly on and in Ogallala beds, all of which are porous and permeable to a high degree. The loss of water by seepage from this canal has increased ground water storage directly under it and has raised the water table along and below the canal into a sharp ground water ridge. Underflow from this ground water ridgelike divide has caused damaging seepage to much valuable land in the Platte River Valley several miles away from the canal. This kind of seepage damage has been demonstrated in several litigations and responsibility for it has been acknowledged by and settlement has been made by the Platte Valley Public Power and Irrigation District to the landowners.

Further, storage of water in the Sutherland Reservoir and in the regulating reservoir at North Platte, together with the diversion of water through the connecting supply canal, may have been in part responsible for an increased discharge indicated in the publishd records of Medicine Creek about 20 miles away, which correlates well with the time of diversion and storage.

The storage of water in the Johnson Canyon Reservoir in Gosper and Dawson Counties, where the water lay over permeable unconsolidated river sands of glacial age, seepage resulted almost at once and damage was experienced on lands 5 to 6 miles to the northeast in the Platte River Valley. Further, infiltration from this same storage into the underground sands caused the water table to be raised more than 40 feet in the wells at and near the town of Elwood on the high tableland about 6 miles south of the reservoir. Diversion and transfer of water through the Phelps County Canal in Gosper and Phelps Counties resulted in large seepage which built up the water table and created a ridge and ground-water divide under it where none had been before. In fact, this ground water divide created by infiltration from the Phelps County Canal locally altered the direction of underflow from a southeasterly direction to a northeasterly direction in a certain local area.

Lake Babcock at Columbus, Nebr. (Loup River Public Power and Irrigation District), was constructed on the Shell Creek Terrace, which consists of unconsolidated river sand and gravel with a thin mantle of loessial clay over it. The terrace is situated between the valley of Shell Creek and the valley of the Loup River north of Columbus. When the supply canal and the reservoir were constructed, most of the clay was removed and heaped up to form the enclosing dikes and embankments, again contrary to geologic advice, and the water was stored directly on the highly permeable sands and gravels. The seepage losses were both large and rapid. The water table under the reservoir (Lake Babcock) was almost immediately raised to about 65 feet above its original level under the Shell Creek Terrace, and the entire column of sand under the reservoir was filled to saturation up to the bottom of the stored water in the lake. To this was added the depth of the water in the lake, making a total addition to the hydraulic pressure at the old water table level of a column of water of about 80 to 85 feet or about 38 pounds per square inch on the old water table level.

This increased the intake of water from the bottom of the reservoir to ground storage several times the natural infiltration rate before storage. Storage of water, I believe, began in July, that is late in the month or early in August, and in about 6 weeks' time seepage to the south of the terrace, a distance of about 2 miles, had come up so much that on 1 farm 100 acres of very fine corn was so badly flooded with ponds of standing water and saturated soil everywhere that none of it could be harvested by corn-shucking time. The entire crop was a complete loss to the owner. Serious seepage damage also occurred to valuable farmlands on the north side of the terrace in Shell Creek Valley. Silt has now partly filled Lake Babcock, but it has not sealed it. Seepage has been diminished by decreasing storage the same as was done at Sutherland.

WHAT IS THE NATURE AND ORIGIN OF THE LANDS IN BROWN COUNTY WHICH ARE TO BE IRRIGATED?

The irrigable lands in Brown County to which this water is to be applied have loams and fine sandy loams and some loamy fine sandy soils. In the main they are considered rather light soils, somewhat "marginal" and not the best types for irrigation, that is they are not well adapted to take large amounts of irrigation water at any one time. They are soils, which for the most part, are best adapted to the application of moderate quantities of water frequently. This is best accomplished by well irrigation or spray irrigation, where the amount of water can be carefully controlled at all times. I am well acquainted with the great success of well irrigation in the Ainsworth area.

These soils were formed mainly by wind action blowing and depositing the dust of ancient dust storms in the area after having sifted it from more sandy materials from wide flood plains of ancient valley flats. Some thousands of years ago the Niobrara River meandered widely over this area in a wide, shallow valley at about the level of the lands in question. It deposited extensive and fairly thick layers of sand and gravel over the valley bottom, and these sands and gravels were somewhat later covered by the wind-deposited silt and some drift sand. The sands and gravels of this early stage Niobrara River flood plain lie on the same permeable beds of the Ogallala as are present farther west in Cherry County. The Ogallala beds thicken considerably to the south in Brown County. Later, the Niobrara River has cut its present deep, narrow valley far below this ancient flood plain, to flow on older zones of the Ogallala, the Brule clay, and still older shales under its present channel.

DISPOSITION OF THE WATER AFTER IT IS APPLIED TO THE BROWN COUNTY LANDS

Some of this water will evaporate directly back to the atmosphere. Another portion of it will be used by plants to mature all kinds of crop vegetation and grasses and will become a part of the plant tissue; and, in the process, some will be returned to the atmosphere by plant transpiration. A considerable proportion of the water will rapidly percolate downward through the rather thin soils and on down through the underlying sand and gravel layers to reach the water table, where it will be added to ground-water storage; which, in this area, pretty well saturates the underlying Ogallala beds and more or less of the younger Pleistocene sands and gravels which lie directly under the soils. This infiltration to ground-water storage will of course be a loss to surface water and ditch irrigation, but it will increase the stored reserve of ground water available for deep-well irrigation in the area. This may well increase the potential well irrigation in this area. It may also be expected to raise the water table in the area, and this may likely result in increased natural discharge to the streams draining from the area ultimately to the Niobrara River. An overall increase in ground-water storage may be expected, and some elevation of the water table may result.

CERTAIN BASIC PRINCIPLES AND CONCLUSIONS

The feasibility of any reclamation project must be judged and evaluated on the basis of certain natural facts and scientific principles insofar as these can be ascertained and interpreted.

1. There must be sufficient water available and deliverable to lands to be irrigated.
2. The water should be efficiently and economically stored, with a minimum of underground seepage loss.
3. It must be transported and delivered with minimum losses from evaporation and seepage.

4. The effects of seepage losses on the local water-table level in all parts of a project must be accurately evaluated, and any and all damages resulting from seepage or drainage due to the project must be appraised and adjusted.

5. Sufficient land suitable for irrigation must be available to make the project economically sound and solvent.

6. Any effect on ground storage of water and seepage from the irrigated lands in the irrigated areas also must be evaluated as fully as possible.

I take it for granted that one further fundamental principle also must apply, namely, that the overall cost of a project or of any unit part of a large basin project must be expected to yield benefits commensurate with costs, including any and all damages that might result from disturbing the status quo equilibrium of nature.

Reclamation projects may conveniently be classified into about four categories, as follows:

1. Projects that are both feasible and needed now. They should be undertaken without delay.

2. Projects that are not feasible now, for economic reasons, but which may become feasible at some future time, when the need for more irrigation and larger crop production, as well as additional water conservation, are actually needed. They should be deferred for the present.

3. Projects that are marginal now and may always be so or for many years to come. They should be deferred or entirely dropped from consideration at this time.

4. Projects that are unfeasible now, and for physical and natural reasons always will be unfeasible. Such projects should never be constructed.

I believe that the so-called Ainsworth project, as presently proposed, is in the fourth category of projects that are unfeasible now, and for physical and natural reasons always will be unfeasible. I think that the field evidence and its scientific evaluation clearly point to no other alternative conclusion relative to this unit of the Niobrara River Basin development.

I wish to state further that I have advocated and urged, generally with a missionary zeal, for many years the development of the maximum beneficial use of all of our water resources, both surface and underground waters. None should be permitted to go to waste if a beneficial use can be found for them. I have always recommended the maximum expansion of irrigation wherever justified by an adequate supply of available water and where it can be done within a framework of sound and acceptable economy. I began to advocate the large-scale development of deep-well irrigation on the plains of southern Nebraska, where there is both an abundant and available supply of ground water and the finest soils to be found anywhere on which to apply it, more than 25 years ago. Present trends and actual development in this area seem to indicate that nearly a thousand wells may be put into operation there this year. I have also for some time urged and advocated the expansion of more surface water irrigation in specific areas in the Platte River Valley, because there is now water that is going to waste and being lost to our State; and, further, it should be spread on the soils, especially on the higher benchlands north of the river, for irrigation and to further replenish underground storage in certain areas in the Platte Valley. For a period of more than a month during the summer of 1953 I was engaged as a consulting geologist by the State of Mississippi to advise the Mississippi Geological Survey in planning and implementing a large program for the use of large ground-water resources for irrigation and industrial development. I am in favor of irrigation for the Ainsworth area, if a feasible and economical plan can be found for its accomplishment.

I favor and advocate feasible irrigation, water conservation, and economical reclamation wherever it is needed and can be economically accomplished.

Mr. HETH. We have also a statement by Kris Kristjanson of the department of agricultural economics, University of Nebraska, on the economic aspects of the Ainsworth irrigation project in western Nebraska, which we would like to have made a part of the record.

Senator MILLIKIN. It may be made a part of the record.

(The document referred to follows:)

ECONOMIC ASPECTS OF THE AINSWORTH IRRIGATION PROJECT IN WESTERN NEBRASKA

Kris Kristjanson, department of agricultural economics, University of Nebraska

Congress authorized the Missouri Basin program under the Flood Control Act of 1944. At that time it was the intent of Congress that further investigations be conducted to determine physical and economic feasibility of each unit of the proposed projects. Appropriations were to be based on these detailed studies.

One of these is the basis for a report by the Bureau of Reclamation, date December 1954, on the Ainsworth unit of the Niobrara project in western Nebraska. The Ainsworth unit will be primarily an irrigation development of 33,960 acres. No flood-control benefits are claimed. It is anticipated by the Bureau that incidental benefits will accrue from fish and wildlife, recreation and stream pollution abatement.

Water from Merritt Reservoir will be transported by a 53-mile canal to the irrigable lands. It is estimated that 45 miles of this canal will be concrete lined. Three project pumping plants will lift water from laterals for 2,589 acres. Twenty-four privately owned low-lift pumps along laterals will be required to serve 1,420 acres. The remaining 29,951 acres will be served directly by gravity. The principal features will be: Merritt Dam and Reservoir; the 53-mile Ainsworth canal; three project pumping plants, laterals, and the necessary surface and subsurface drains.

The Merritt Dam will be located on the Snake River just south of the Nebraska National Forest. The proposed irrigated lands are located approximately 53 miles east of the dam. The project lands lie in the northern portion of Brown and Rock Counties, extending 22 miles in length from east to west and 14 miles in width from north to south. The southern boundary roughly follows United States Highway 20 and the northern limit is to the "brakes" 4 or more miles south of the Niobrara River (fig. 1).

The Ainsworth unit is one of 14 units comprising the proposed Niobrara project. The Bureau of Reclamation has selected the Ainsworth unit for early construction. The following is a brief analysis of the economic aspects of the plan proposed by the Bureau of Reclamation.

COST OF UNIT

The cost of providing irrigation by gravity flow as proposed in the Bureau of Reclamation report is approximately $800 per acre. Of this amount about $750 is reimbursable. The cost of this unit is estimated by the Bureau of Reclamation to be $25,934,000. The interest cost during construction would be approximately $965,000 or the net Federal investment would be $26,899,000.

This is primarily an irrigation project. Of the net Federal investment of $26,899,000 a sum of $25,440,700 would be allocated to irrigation, $486,800 to fish and wildlife, and $6,500 to recreation. The Bureau did not allocate the $965,000—the cost of interest during the period of construction.

COSTS AND BENEFITS

The annual costs for this unit, assuming 100-year life and 2½ percent interest, are estimated by the Bureau at $815,600. The annual direct benefits are estimated to be $708,000 and the indirect benefits $1,056,800 (table 1).

The annual direct benefits which are the estimated net increase in farm income are less than the annual costs. Indirect benefits are estimated by the Bureau as the values added to commodities as they are processed. There is no agreement that indirect benefits can be measured in monetary terms.

TABLE 1.—*Annual costs and benefits, Ainsworth unit*

Item	*Ainsworth unit*
Investment	$26,899,000
Annual costs:	
Annual equivalent [1]	734,600
Operation and maintenance [2]	81,000
Total	815,600
Annual benefits:	
Direct irrigation and other benefits	708,000
"Indirect" irrigation [3]	1,056,800
Total	1,764,800

[1] Annual equivalent for 100-year life and 2½ percent interest (amortization).
[2] For irrigation $78,100; recreation $1,500; cost of pumping $1,400.
[3] Includes indirect and public benefits.

REPAYMENT

Under reclamation law, water users are allowed a 10-year development period when no payments are required. The repayment contract then provides for 40 annual payments. The Bureau estimates that water users would be able to pay a maximum of $205,400 annually on cost of construction after paying for operation and maintenance. The actual amount is subject to negotiation and could be lower than this amount, according to the Bureau. Placing cost and repayment on a comparable time basis, the annual repayment of $205,400 from the 10th to the 50th year has the same value as $141,800 annually for 50 years. This compares with an annual cost of $895,500 for 50-year life. Or, from the viewpoint of economic analysis, payments on construction by water users would retire about 15 percent of the Federal investment and the public would bear the remaining 85 percent (table 2). While contracts are usually based on a 40-year repayment period, they have often been extended in the past. In some cases this runs for a period of more than 200 years.[1]

TABLE 2.—*Annual cost and repayments, Ainsworth unit*

Item	*Ainsworth unit*
Investment in irrigation including $965,000 interest during construction	$26,899,000
Annual equivalent (50-year life, 2½ percent)	$946,800
Annual value of irrigation payments 10th to 50th year [1]	$141,800
Percent repayment is of cost	15

[1] Annual payment of $205,400 on cost of construction from 10th to 50th year has the same annual value as $141,800 paid annually for a full 50-year period. This provides an annual value of repayment to compare with annual cost, assuming 50-year life. Placing both on 50-year basis results in same relationship as placing both on annual value for 100-year basis.
Payments are net after deduction for operation and maintenance.

It should be noted, of course, that water users are not required to pay interest on deferred payments. Hence the payments will add up to about $8 million in 40 years, leaving around $18 million to be paid from other sources. This $18 million, according to the Bureau, is expected to be paid from basinwide net revenues in the Missouri Basin project (account).

RELIANCE ON BASIN ACCOUNT

An item of nearly $500 million is in dispute between the Bureau and the Army. The Army believes this item, which is a part of the cost of main stem dams, should be allocated to power and irrigation while the Bureau disagrees. If any large proportion of this item should eventually be allocated to power and irrigation, it would materially affect basinwide net revenues. This was pointed out in the Missouri Basin Survey Commission report. Until a decision has been

[1] Construction Costs and Repayment on Federal Reclamation Projects, report of Committee on Interior and Insular Affairs, September 1952, p. 18.
Economics of Federal Irrigation Projects in the Missouri Basin, by Ottar Nervik et al., Circular 110, Agricultural Experiment Station, Brookings, S. Dak., June 1954, p. 7.

made, the Bureau cannot say that the Missouri Basin project can carry the excess cost of the Ainsworth unit, as the current Bureau report claims. Present indications are that power rates must be increased if there is to be any surplus power revenue to apply to the irrigation account.

PUMP IRRIGATION—AN ALTERNATIVE

Land in this area can be irrigated by pump irrigation.[2] There is a good supply of underground water and the soil is suitable for irrigation.

The cost of land preparation would be approximately the same whether irrigation water is provided by private pumps or by the Bureau of Reclamation plan. However there is a difference in the initial investment. Under the Bureau of Reclamation plan the investment is estimated at approximately $800 per acre. In contrast, a recent study made in eastern Nebraska shows that the average initial investment for pump irrigation[3] ranges from $3,059 to $8,063 per unit (table 3).

TABLE 3.—*Investment in pumping equipment*[1]

Item	Average investment		
	Range in lift (feet) 20–70; average lift (feet): 46	Range in lift (feet): 71–120; average lift (feet): 96	Range in lift (feet): over 120; average lift (feet): 161
Well	$1,230	$2,519	$2,972
Pump	1,128	1,888	2,645
Power unit	643	1,453	2,347
Shelter	58	87	99
Total	3,059	5,947	8,063
Range in total investment:			
20- to 70-foot lift	$650 to $8,204		
71- to 120-foot lift	$1,864 to $15,126		
Over 120-foot lift	$3,838 to $15,843		

[1] A. W. Epp. The Cost of Pumping Water for Irrigation in Nebraska, Nebraska Agricultural Experiment Station Bulletin 426, Lincoln, Nebr., November 1954, p. 6.

Approximately 90 acres of land can be irrigated with an investment of $3,000 to $8,000. Therefore the average initial investment costs for pump irrigation will range from $35 to $90 per acre depending on local conditions.

CONCLUSIONS

The cost of the Ainsworth irrigation project is high and the returns low. The cost is estimated by the Bureau of Reclamation to be about $800 per acre. When interest costs are considered, the water users will repay approximately 15 percent of the cost over a period of 50 years.

Pump irrigation can be provided at a cost of $35 to $90 per acre. Integration of dry land and irrigation farming in the same ownership unit can usually be accomplished more effectively where private pump irrigation is used than where Federal projects are developed.

Under the Bureau of Reclamation plan most of the cost of irrigation is paid by the taxpayer. If pump irrigation is used, the initial investment is made by the landowner. Credit facilities designed for this kind of investment would encourage the development of pump irrigation in areas where there is an abundant supply of underground water.

Mr. HETH. As I understand it, the record here will include reference to the House committee hearings?

Senator MILLIKIN. That is correct.

[2] It is estimated that 25 to 40 percent of the specific area under consideration is suitable for pump irrigation, as well as a large acreage in the surrounding area.

[3] Investment in well, casing, pump, and power unit.

Mr. LINEWEAVER. Mr. Chairman, I would like, if it is agreeable with you, to leave this record open so that both Mr. Smith and Mr. Bostwick can present any statements here for the record, and also Mr. Heth, that they would like to submit.

Senator MILLIKIN. That may be done.

Mr. LINEWEAVER. We will hold the record open until the middle of next week.

Mr. HETH. I might make this map a part of the record for reference to the Osterman case and the Anaheim case.

Senator MILLIKIN. Is it practical to make a map a part of the record?

Mr. LINEWEAVER. I do not believe it is practical.

Senator MILLIKIN. If it is not practical, we will file it with the committee. Have you anything further to say?

Mr. HETH. I could go on all night, your honor. No; I believe that is all, your honor.

Senator MILLIKIN. Thank you very much. Are there any other witnesses?

Mr. LINEWEAVER. That is all of the witnesses.

Any statements that were made in the House that you would prefer to have inserted into the record here will be inserted if they are furnished by Wednesday of next week.

Senator MILLIKIN. I think the staff should take a look over the House record and determine what part you can put into this record.

Mr. HETH. Did you say by Wednesday of next week?

Mr. LINEWEAVER. Yes; if that is time enough, or sometime next week. Have you anything more?

Mr. SMITH. No; I do not. Thank you.

Senator MILLIKIN. Does that exhaust the witnesses?

Mr. LINEWEAVER. That exhausts the list of witnesses, Mr. Chairman.

Senator MILLIKIN. The committee will adjourn with the understanding that comments on the feasibility report when received will be inserted in the record as supplemental material.

(The supplemental material referred to follows:)

LETTER FROM INTERIOR DEPARTMENT

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., February 2, 1956.

Hon. RICHARD M. NIXON,
President of the Senate,
Washington, D. C.

MY DEAR MR. PRESIDENT: The report of the Department of the Interior on the Ainsworth unit, Nebraska, of the Missouri River Basin project is transmitted pursuant to the provision of section 2 of Public Law 612, 83d Congress, 2d session (68 Stat. 757), which reads as follows:

"Construction of the units herein authorized to be included in the Missouri River Basin plan shall not be undertaken until a report demonstrating their physical and economic feasibility has been completed, reviewed by the affected States, and approved by the Congress."

The Ainsworth unit is proposed to provide a surface water supply and facilities to irrigate some 34,000 acres of land in northcentral Nebraska. The engineering and economic feasibility of the unit is demonstrated in the basic report of the regional director, as concurred in by the Commissioner of Reclamation. Practically the entire construction cost of $25,934,000 is allocated to irrigation and will be repaid by direct contract with the water users and

revenues from other units of the Missouri River Basin project, in accordance with reclamation law.

Copies of this Department's proposed report were transmitted to the affected States, and to the agencies represented on the Interagency Committee on Water Resources for comments. Copies of the official comments which have been received are enclosed.

The report and copies of all comments were transmitted to the President. Enclosed is a copy of the letter of comments of January 26, 1956, from Assistant Budget Director Percy Rappaport.

Sincerely yours,

FRED G. AANDAHL,
Acting Secretary of the Interior.

LETTER FROM BUREAU OF THE BUDGET
EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington 25, D. C., January 26, 1956.

The honorable the SECRETARY OF THE INTERIOR.

MY DEAR MR. SECRETARY: This will acknowledge your letter of November 21, 1955, submitting your report on the Ainsworth unit, Missouri River Basin project, Nebraska, prepared in accordance with the provisions of Public Law 612, 83d Congress, and requesting advice as to its relationship to the program of the President.

This unit would be located in Cherry, Brown, and Rock Counties in the sandhills area of Nebraska where the average annual precipitation is 20 inches. It would involve construction of the Merritt Dam and Reservoir, the 53-mile-long Ainsworth Canal, 3 small pumping plants, and such laterals and drains as may be necessary to furnish water to 33,960 acres of new irrigable land which is being dry-farmed to some extent at this time.

The total cost, based on July 1954 price levels, is estimated at $25,934,000, of which $25,433,100 is allocated to irrigation and consequently is reimbursable. Proposed nonreimbursable costs total $500,900 of which $486,100 is allocated to fish and wildlife and $14,800 to recreation. Based on a 100-year amortization period, the stated benefit-cost ratios are 2.16 when total anticipated benefits are used and 0.87 when direct benefits only are used. On the basis of a 50-year amortization period, the corresponding ratios would be 1.98 and 0.78, respectively.

The report estimates that the irrigators would be able to repay $7,997,000 in 40 years, exclusive of a 10-year development period, and proposes that the remainder of the reimbursable cost be repaid within the useful life of the unit from net power revenues of the Missouri River Basin project. The plan contemplates development of 308 farms averaging 110 acres in size and $82,500 in cost. It is estimated that if maximum payment capacity is applied, each farm could repay $26,600 (32 percent) of its construction cost of $6.05 per acre per year. Annual operation, maintenance, and replacement costs are estimated at $2.30 per acre. On this basis, the total annual cost to the irrigators would be $8.35 per acre.

Information presented by local interests before the House Subcommittee on Irrigation and Reclamation of the Committee on Interior and Insular Affairs raised questions regarding the relative merits of irrigating the prevailing light soils by means of sprinkler irrigation and by means of the recommended plan, the water-holding capacity of Merritt Dam and Reservoir, the adverse effect of possible seepage on adjacent and lower level lands, and the difficulties which may be encountered in maintaining the irrigation works. Should it be found that remedial measures of a scope greater than that contemplated in the report are required, the additional costs involved might have a serious adverse effect on the financial feasibility of the unit.

The Department of Agriculture expresses certain reservations concerning the economic feasibility of the recommended improvement, particularly in view of the high cost involved, and states that some of the crops that would be produced are now in surplus supply. It also suggests that the needs of farmers most interested in obtaining irrigation could be met with pumped ground water which the Nebraska Agricultural Experiment Station has estimated would cost between $35 and $90 per acre as compared with nearly $750 per acre under the proposed gravity irrigation system. While we recognize that you have given

consideration to these comments the report and accompanying papers do not contain conclusive evidence that alternate methods of irrigation have been fully explored and resolved.

The Bureau of the Budget notes that the use of secondary benefits is necessary to obtain a benefit-cost ratio in excess of unity. In view of the magnitude of these benefits it would seem reasonable to make some provision ,such as a requirement for establishment of a conservancy district, for repacture of an appropriate portion of the cost of making such benefits available. It is also noted that the estimated annual repayment by the irrigators of $6.05 per acre for construction is disproportionately high in relation to provisions of repayment contracts now in effect on similar improvements in the same general area. This raises some doubt as to whether the estimates of repayments by the irrigators contained in the report could be fully realized. In any event, if the proposed development is approved for construction by the Congress, a careful reevaluation of these two factors, as well as those regarding economic and physical feasibility, should be made prior to the submission of any requests for funds to initiate construction.

The report states that repayment of the reimbursable allocation would be accomplished within the useful life of the unit. Where repayments from irrigation beneficiaries, together with any net revenues of other purposes, are insufficient to provide full repayment of irrigation costs within 50 years, the Bureau of the Budget believes that (1) the initial investment costs which are in excess of the sum of the anticipated repayments within 50 years, exclusive of the permissible development period, should be identified, (2) authorization for construction should provide that such excess initial investment costs be borne by the Federal Government as a contribution to irrigation, and (3) the letter transmitting the report to Congress should include proposed language stating the amount and composition of such contribution for incorporation in the authorizing legislation.

The Bureau of the Budget also believes that, if the Congress should approve construction of the recommended improvement, initiation of construction should be made contingent upon the execution of a repayment contract which, in general, is consistent with the estimates of repayment capacity contained in the report.

It is noted that the recreational and fish and wildlife features of the proposed plan are of local rather than national significance. On this basis, it would appear reasonable that the costs of these improvements should be borne primarily by local beneficiaries or other local interests. The costs of preventing damages to existing fish and wildlife resources and the costs of minimum facilities necessary for the general protection and operation of the proposed development and for the accommodation and protection of the visiting public should, however, be treated as a part of the overall costs and allocated to the basic purposes of the improvement.

Subject to the foregoing comments, you are advised that there would be no objection to the submission of the report to the Congress. No commitment, however, can be made at this time as to when any estimate of appropriation would be submitted for construction of the unit, if approved by the Congress, since this would be governed by the President's budgetary objectives as determined by the then prevailing fiscal situation.

It is requested that a copy of this letter be included with your report when it is submitted to the Congress.

Sincerely yours,

(Signed) PERCY RAPPAPORT,
Assistant Director.

LETTER FROM DEPARTMENT OF THE INTERIOR
(THROUGH THE BUREAU OF THE BUDGET)

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington 25, D. C., November 21, 1955.

The PRESIDENT,
The White House, Washington 25, D. C.

MY DEAR MR. PRESIDENT: My report on the Ainsworth unit, Nebraska, Missouri River Basin project, is transmitted herewith for your consideration, pursuant to the provisions of section 9 (a) of the Reclamation Project Act of 1939 and of Public Law 612, 83d Congress.

The Ainsworth unit will consist of a dam at the Merritt site on Snake Creek, a tributary ofthe Niobrara River in north-central Nebraska, a canal thence proceeding some 53 miles eastwardly to lands in the vicinity of Ainsworth, Nebr., and the necessary distribution, drainage, and other facilities to permit the irrigation of some 34,000 acres of land. The project lands are completely suitable to this type of agriculture. The landowners have expressed a desire for the project to be built and have formed the necessary organization to contract with the Government for repayment of those costs within their ability to repay. Irrigation is necessary in this area to provide a stable diversified agricultural economy and to complement the existing livestock enterprise because rainfall normally is insufficient and is often unfavorably distributed. The total estimated construction cost is unfavorably distributed. The total estimated construction cost is $25,934,000, 98 percent of which is allocated to irrigation. Water users could repay about one-third of this amount in 40 years, in addition to operation and maintenance of the project, and the remainder would be repaid from surplus revenues derived from other units of the Missouri River Basin project. The unit has an overall benefit-cost ratio of 2.16 to 1, based upon our customary method of calculation. Under criteria specified by the Bureau of the Budget, i.e., 50-year period of analysis, the benefit-cost ratio would be 1.98 to 1 for overall benefits and 0.78 to 1 using only direct benefits.

The Ainsworth unit was 1 of 4 units authorized for construction under the Missouri River Basin project by Public Law 612, 83d Congress, with the proviso that construction not be undertaken until a report demonstrating the physical and economic feasibility had been completed, reviewed by the affected States, and approved by the Congress. This report, prepared to conform with that proviso, was transmitted to officials of the States of the Missouri River Basin and to the Secretary of the Army for their consideration and recommendation.

It was sent also to the State of Nebraska for the comments of the head of the agency exercising administration over the wildlife resources of that State, and to the Departments of Agriculture, Commerce, Labor, and Health, Education, and Welfare, and the Federal Power Commission in accordance with interagency agreements. All reviewing agencies, except the State of North Dakota which is not vitally concerned, have submitted comments, and copies are enclosed with the report.

I shall appreciate having advice concerning the relationship of the Ainsworth unit, Missouri River Basin project, to your program. I plan to transmit the report to the Congress for its consideration and appropriate action at the opening of the second session of the 84th Congress.

Sincerely yours,

(Signed) DOUGLAS MCKAY,
Secretary of the Interior.

LETTER FROM BUREAU OF RECLAMATION

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington 25, D. C., September 28, 1955.

The SECRETARY OF THE INTERIOR.

SIR: This is my report on the Ainsworth unit, Nebraska, Missouri River Basin project. It is based on, and includes, the proposed report on this project which you approved and adopted on June 10, 1955.

Copies of your proposed report were transmitted to the affected States of the Missouri River Basin and the Secretary of the Army in accordance with the provisions of section 1 (c) of the Flood Control Act of 1944 and Public Law 612, 83d Congress, and to the State of Nebraska for comments from the head of the agency exercising administration over the wildlife resources of that State in accordance with the provisions of the act of August 14, 1946. Copies of the report were sent also to the agencies represented on the Interagency Committee on Water Resources for their comments. Comments have been received from all States, except the Sate of North Dakota, which would not be affected directly by the project, and from all agencies to which the report was sent. Copies of all letters of comment received are atached to and made a part of the report.

In general, the comments of the reviewing agencies were favorable or offered no objections. Governor Anderson of Nebraska concurred in the views of his predecessor, Governor Crosby, which were favorable to the development of the Ainsworth unit. The comments of former Governor Crosby, which were noted

in the report approved by Under Secretary Davis on June 10, 1955, included an opinion that the proposed use of water was not regarded as being contrary to the laws of the State of Nebraska.

The Department of Agriculture questioned certain phases of the economic analysis and suggested that further consideration be given to development of the area by ground-water pumping. The economic analysis for the Ainsworth unit is consistent with current policies in effect in the Missouri River Basin and the question of alternative irrigation development by ground water was thoroughly explored by the Bureau of Reclamation and the Geological Survey before being rejected in favor of the proposed development. Our detailed views are contained in our reply of September 26, 1955, to the Secretary of Agriculture, a copy of which is attached to the copy of the letter of comments from the Department of Agriculture.

The Department of Commerce questioned our evaluation of indirect or secondary benefits. These were estimated in accordance with standard Bureau of Reclamation practice. It should be noted that acceptance of only 10 percent of the computed indirect and public benefits is necessary to establish a favorable ratio of benefits to costs.

In view of the favorable nature of most of the comments received and because those questions which were raised do not appear to be critical I believe that revision of your proposed report as a result of the review of various agencies is not necessary.

Accordingly, I recommend that you approve and adopt this report as your report on the Ainsworth unit, Nebraska, Missouri River Basin project, and that you transmit it together with the attached comments to the President and subsequently to the Congress in accordance with the provisions of Public Law 612, 83d Congress.

Respectfully,

(Signed) S. W. CROSTHWAIT,
Acting Commissioner.

Approved and adopted, November 21, 1955.

(Signed) DOUGLAS MCKAY,
Secretary of the Interior.

LETTER FROM BUREAU OF RECLAMATION

DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION
Washington D. C., March 16, 1955

The SECRETARY OF THE INTERIOR.

SIR: This is my proposed report on a plan of development for the Ainsworth unit, Nebraska, Missouri River Basin project. It is based upon the accompanying report of the regional director at Denver, Colo., dated February 1955, with its substantiating materials. The regional director's report has been coordinated at field level with the various local, State, and Federal agencies having interests in the proposed project. Summary reports of the Fish and Wildlife Service and the National Park Service are incorporated in the substantiating materials.

No units were identified in the Niobrara Basin in the original report on the Missouri River Basin project (S. D. 191, 78th Cong.). A comprehensive investigation of the land and water resources of the basin resulted in a basin report dated June 1953, which outlined 14 potential units, but only 4 of these were considered feasible under present economic conditions, namely, the Mirage Flats extension, LaVaca Flats, O'Neill, and Ainsworth units. Public Law 612 of the 83d Congress authorized these four projects as units of the Missouri River Basin project but included a proviso as follows: "Construction of the units herein authorized to be included in the Missouri River Basin plan shall not be undertaken until a report demonstrating their physical and economic feasibility has been completed, reviewed by the affected States, and approved by the Congress." This report looks toward fulfillment of that requirement as regards the proposed Ainsworth unit.

The unit will consist of Merritt Dam and Reservoir, the Ainsworth Canal, and various distribution and drainage works to provide service for 33,960 acres of irrigable land. The reservoir site is in the valley of the Snake River, a major tributary of the Niobrara River in Cherry County, Nebr., about 25 miles southwest of the city of Valentine. The maximum controlled storage capacity will be

68,600 acre-feet, of which 67,500 will be allocated to irrigation water conservation and 1,100 acre-feet will be dead storage.

Ainsworth Canal will originate at Merritt Dam and will flow generally eastward for a distance of about 53 miles to the project lands in the vicinity of Johnstown, Nebr. Because of a severe problem of seepage about 44 miles of the canal will be lined with concrete.

The irrigable lands lie in a roughly rectangular district extending 22 miles east from Johnstown and 14 miles north from the same point. The towns of Johnstown, Ainsworth and Long Pine are adjacent to the irrigable area. The soils are inherently fertile, well drained and well adapted to sustained irrigation. The water supply from the dam, through the main canal and distribution system to the lands is by gravity flow. Three areas, aggregating 2,589 acres, will require low-lift project pumps. About 1,420 acres will also be furnished irrigation water provided each landowner installs his own pump lift.

The estimated cost of the Ainsworth unit based on prices prevailing in July 1954 is $25,934,000. This total includes an expenditure of $10,000 for fish screens at the reservoir outlets, and $14,800 for minimum basic recreational facilities. The total project benefits, after appropriate adjustment for negative benefits and the 5-year development period, are computed at $1,764,800 annually. Corresponding annual costs total $817,200 annually. These figures result in an overall benefit-cost ratio of 2.16 to 1. If direct benefits only are used the ratio is 0.87 to 1.

The foregoing calculations are based on an evaluation period of 100 years. If such calculations are made on a 50-year basis and including an appropriate salvage value the project benefit-cost ratio would be 1.98 to 1. Utilizing only direct irrigation benefits the ratio would be 0.78 to 1.

In the tentative allocation of construction costs, specific costs and the share of joint costs allocated to fish and wildlife conservation and specific costs of minimum basic recreation facilities are considered nonreimbursable. All other project costs are allocated to irrigation. The allocation of costs is as follows:

Irrigation	$25,433,100
Fish and Wildlife	486,100
Recreation	14,800
Total	25,934,000

The annual payment capacity for all lands on the unit is computed to average $8.35 an acre. Annual operation, maintenance, and replacement costs, including the cost of pumping energy, are $2.30 an acre. The average annual amount available for water charges (repayment capacity) is $6.05 an acre. If 100 percent of repayment capacity is utilized $7,997,000 of the construction costs could be retired in 40 years. The actual amount of annual payment is subject to negotiation. Inasmuch as these returns will not retire the entire cost allocated to irrigation for repayment, assistance will be required from other revenues of the Missouri River Basin project. The required assistance would be $17,436,100 if 100 percent of payment capacity is negotiated. Should the repayment negotiations result in less than 100 percent of repayment capacity being required, the figures on repayment and assistance needed would be proportionately affected. Our analyses of the Missouri River Basin project indicate that the basinwide net revenues will be adequate to pay all reimbursable costs, including those of the Ainsworth unit in a period of time well within the useful life of the works.

Local interest in construction of the Ainsworth unit and in irrigation of the proposed lands is indicated by formation of the Ainsworth Irrigation District and the expressed willingness to negotiate a repayment contract under conditions as outlined in the report. A number of ranchers along the course of the Ainsworth Canal have expressed opposition to the project on the basis that it would be detrimental to their operations, a potential danger to livestock, and a possible source of waterlogging of adjacent lands. These objections may be partially overcome by fencing the canal right-of-way, lining the canal, and by the computation of such detrimental effects in determining the fair value of the right-of-way which must be acquired for the canal. However, most of the lands through which the canal will pass were settled under provisions of the Canal Act of 1890, by which easements and rights-of-way were reserved to the Government.

Opposition to the unit by a number of Nebraska ranchers has also been expressed on the ground that the diversions of water involved would be violative

of Nebraska law relative to watershed diversion. It is pertinent to note in this connection that while such objections are being vigorously pressed and may result in litigation to determine the issue, both the then Attorney General and the then Governor of the State advised that they did not regard the proposed diversions here involved as being contrary to Nebraska law governing watershed diversion.

The recommendations of the National Park Service and the Fish and Wildlife Service are concurred in, insofar as they are compatible with the operation of the unit for its primary purpose. Normal operation of the dam and reservoir is expected to result in a live stream below the dam at all times, as recommended by both Services. Operation of the reservoir and the associated lands and basic recreational facilities for maximum practicable public use and enjoyment is contemplated. Negotiations leading to the final operating plan for these purposes will involve consultations among the Federal and State agencies interested.

Subject, of course, to consideration of comments received, I recommend that you approve and adopt this report as your proposed report and that you authorize its transmittal to the governors of all the States of the Missouri River basin and to the Secretary of the Army in accordance with the requirements of the Flood Control Act of 1944; to the Governor of Nebraska for any report and recommendations which the head of the agency exercising administration over the wildlife resources of that State may wish to make in accordance with the provisions of the act of August 14, 1946 (60 Stat. 1080); and to the Federal agencies represented on the Inter-Agency Committee on Water Resources for their comments. Upon receipt of replies in response to these transmittals, copies of the report, together with comments which are received, will be submitted for your further consideration and appropriate action.

Respectfully,

S. W. CROSTHWAIT, *Acting Commissioner.*

Approved and adopted: June 10, 1955.

CLARENCE A. DAVIS,
Acting Secretary of the Interior.

LETTER FROM DEPARTMENT OF THE ARMY

DEPARTMENT OF THE ARMY,
OFFICE OF THE CHIEF OF ENGINEER,
Washington 25, D. C., July 26, 1955.

Hon. WILBUR A. DEXHEIMER,
Commissioner, Bureau of Reclamation,
Department of the Interior, Washington, D. C.

DEAR MR. DEXHEIMER: Reference is made to your letter of June 13, 1955, addressed to the Secretary of the Army and the Chief of Engineers, transmitting for review and comment the proposed report of the Department of the Interior on the Ainsworth unit, Missouri Basin project, Nebraska.

A review of your report indicates that construction of the Ainsworth project as proposed therein would not conflict with any projects or plans of the Corps of Engineers.

The opportunity to review your report is appreciated.

Sincerely yours,

S. D. STURGIS, Jr.,
Lieutenant General, USA,
Chief of Engineers.

LETTER FROM DEPARTMENT OF AGRICULTURE

DEPARTMENT OF AGRICULTURE,
Washington, D. C., August 18, 1955.

The honorable the SECRETARY OF THE INTERIOR.

DEAR MR. SECRETARY: This is in reply to the letter of June 13, 1955, from the Commissioner of Reclamation transmitting for our review and comment your proposed report on the Ainsworth unit, Nebraska, of the Missouri River Basin project.

The proposed Ainsworth project, consisting principally of a 68,600 acre-foot storage structure on the Snake River, a canal to convey water 53 miles to the

project lands, and various distribution and drainage works, would provide water for irrigating 38,960 acres of land now mostly dry-farmed at a total construction cost of $25,934,000 plus $964,600 interest during construction and $109,000 for the economic cost of pumping power. The benefit-cost ratio based on a 100-year period of analysis is shown to be 0.87 to 1.00, considering only direct benefits, and to be 2.16 to 1.00 considering both direct benefits and indirect benefits such as values added to commodities as they are processed.

Of the construction cost, $25,433,100 would be charged to irrigation. The land to be irrigated is now in some 262 ownerships and 169 operating farm units. Under full irrigation development it would be divided into an estimated 308 operating farm units for each of which the average project construction cost would be over $82,500.

The project cost chargeable to irrigation equals the estimated total net annual payment capacity for all lands in the unit over a period of more than 120 years. Based on a 40-year repayment period and utilization of maximum payment capacity, the irrigation repayments to the Federal Government would be $7,997,000 or nearly $26,600 per average operating farm unit.

This would leave $17,436,100 or over $56,000 per average operating farm unit to be repaid from other sources, presumably by the sale of power from other units of the Missouri River Basin project. In view of the allocation status of some $500 million of mainstem Missouri River Dam costs there may be a question as to the availability of revenues for such payments.

As described in the report, the irrigable lands of the project are presently used predominantly for production of feed grain and to a minor extent for forage corps. Most of the production of these lands and of the intermingled native grasslands is utilized on farms in the production of livestock and livestock products. The report considers present land use of the irrigable area as being generally in accord with that best suited to dryland conditions. It points out that during recent years the area has been comparatively prosperous, although in past years of low prices and drought the local economy was precarious.

The report states that some 2,500 acres of land adjoining the unit irrigable lands are currently being irrigated with pumped ground water and that an area along the southern fringe of the unit was specifically excluded from proposed gravity service became ground water can profitably be developed by private enterprise. It also indicates that all of the unit is underlain by water-bearing sands, gravels, and sandstones, although it states that wells are not very productive and must be drilled quite deep to maintain sizable yields.

In view of the project characteristics and other factors touched on above, and in spite of the expected desirable large increases in production of feed grains, alfalfa, forage, and the planned production of specialty crops, some of which are now in surplus supply, we have some reservations concerning the economic feasibility of the proposed water development and whether it is the most economically desirable development possible. Its cost in relation to other economic factors such as the amount of expected direct farm benefits, the inability of farmers to repay more than about 31 percent of the investment costs, and the need for substantial assistance from other sources indicate the advisability of further study of alternative methods of improvement and development of the project lands and the surrounding economy. Recent estimates by the Nebraska Agricultural Experiment Station that lands may be irrigated by pumping for initial investment costs of from $35 to $90 per acre with lifts up to over 160 feet would seem worth exhaustive consideration because of their relative economy and the lower public costs involved. Although it may not be possible to irrigate all lands in the proposed unit by that method, it may be possible to meet the needs of those farmers most interested in irrigation by such an approach. It would also have the advantage of eliminating some possible adverse effects of the project.

In this connection, ranchers operating in the sandhills range area to be traversed by the proposed project canal, whom the report indicates are opposed to the project, have registered strong objections against the project with this Department. Their objections, from the standpoint of the effects of the canal upon their operations, are based principally upon apprehensions about its possible adverse effects as a trap for cattle that may drift through fences in snowstorms, as a drainage canal when empty and a source of seepage when full to damage hay meadows and winterfeed, and as an obstacle to movement of cattle and equipment in spite of bridges that might be built across it.

The proposed project would affect about 880 acres of national forest lands, of which 520 acres would be inundated and permanently removed from grazing use. The 880 acres would be withdrawn for project use and plans would be

developed by the Forest Service for use of these lands, as provided for in the report.

We appreciate your courtesy in making the report available to us for review.

Sincerely yours,

(Signed) TRUE D. MORSE,
Acting Secretary.

LETTER FROM DEPARTMENT OF COMMERCE

THE UNDER SECRETARY OF COMMERCE FOR TRANSPORTATION,
Washington 25, August 2, 1955.

Mr. W. A. DEXHEIMER,
Commissioner, United States Department of the Interior,
Bureau of Reclamation, Washington 25, D. C.

DEAR MR. DEXEHEIMER: Since Mr. H. B. McCoy no longer represents the Department of Commerce in the coordination of Commerce views on reports of water resources projects, I have been designated as the Commerce alternate on the Interagency Committee on Water Resources. Mr. McCoy referred to me for reply your letter of June 13, 1955, requesting Commerce comments on the proposed report of the Department of the Interior on the Ainsworth unit, Nebraska. According to your letter, this unit was made an authorized part of the Missouri River Basin project by Public Law 612, 83d Congress.

It is noted that in table 35, page 140, the proposed report cites a direct benefit-cost ratio of 0.87 and a total benefit-cost ratio (including indirect benefits) of 2.16, based upon the Bureau of Reclamation analysis which uses a 100-year economic life for the project. Table 35 also shows that, based upon an analysis made by the Bureau of Reclamation in conformity with Circular No. A–47 of the Bureau of the Budget, the direct benefit-cost ratio is cited as 0.69 and the total benefit-cost ratio (including indirect benefits) is cited as 1.74. Although certain information is presented in the report to support the total benefit-cost ratio, the economic basis upon which such substantial indirect or secondary benefits can be derived from a project that has an unfavorable direct benefit-cost ratio is not clear to this Department.

It appears that the project area has adequate horizontal geodetic control. Nevertheless, about 185 miles of first and second order levels, at an estimated cost of $12,000, will be required to furnish the project area with adequate vertical geodetic control.

It is assumed that in conformity with usual procedures a copy of this reply will accompany the proposed report when it is transmitted to the Bureau of the Budget and the Congress.

Very truly yours,

(Signed) PAUL F. ROYSTER,
Assistant to Under Secretary.

LETTER FROM PUBLIC HEALTH SERVICE

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
PUBLIC HEALTH SERVICE,
Washington 25, D. C., September 16, 1955.

Reference Code 735.

Mr. W. A. DEXHEIMER,
Commissioner, Bureau of Reclamation,
United States Department of the Interior,
Washington 25, D. C.

DEAR MR. DEXHEIMER: This is in reply to your letter dated June 13, 1955, transmitting, in behalf of the Secretary of the Interior, the proposed Department report on the Ainsworth unit, Nebraska. The report has been reviewed with respect to its public health-related aspects of water resources development. The resulting comments have been prepared and are forwarded in fulfillment of our responsibilities as a member of the Interagency Committee on Water Resources.

It is understood that the unit will include Merritt Dam and Reservoir, Ainsworth Canal some 53 miles in length most of which will be concrete-lined, and the necessary works to provide for irrigation of approximately 34,000 acres of land. Operation of the dam and reservoir is expected to maintain a continuous flow in the stream below the dam.

It is further understood and appreciated that your field organization has worked cooperatively with that of the Public Health Service to insure consideration of public health factors related to the proposed development. In that regard the report Niobrara River Basin, Water Pollution Investigation has received attention as have previously submitted comments on earlier drafts of the Ainsworth unit report.

Specific comments on the final report draft now under consideration are as follows:

1. Page 10, paragraph 42: This paragraph includes an item of $300 annually as a benefit estimated by the Public Health Service as accruing to the project from increased low flows in Bone Creek.

2. Page 11, paragraph 45: It is noted that no costs have been allocated to the function of stream sanitation and water pollution control.

3. Page 16, paragraph 59: This paragraph briefly reviews the report Niobrara River Basin, Water Pollution Investigation prepared by the Public Health Service in cooperation with the Bureau of Reclamation and the State Health Departments of Nebraska, Wyoming, and South Dakota.

4. Page 54: Requirements for other purposes.—As users of water for purposes other than irrigation are not contemplated for this project, studies did not include other water uses such as stream pollution control or municipal and domestic water supplies. Adequate water for these latter uses is secured from wells throughout the unit area.

5. Page 71: Municipal, domestic, and industrial water supplies.—It is recognized that this area is served by well waters from a generally adequate supply as regards to both quantity and quality.

6. Page 71: Stream pollution abatement.—This section reviews the study made by the Public health Service in cooperation with the State health department concerned and the Bureau of Reclamation. The report issued covering this study indicated that increased flows in Bone Creek below Ainsworth would provide a benefit. As potential irrigation development will improve low-flow conditions in Bone Creek, a benefit of $300 annually for water-pollution control is considered in the economic analyses.

7. Page 130, table 27: Benefit-cost analysis.—$300 for pollution abatement is carried as an annual direct benefit.

8. Page 131, table 28: Allocation of construction cost.—Carried under pollution abatement is an annual benefit of $300 and a justifiable investment of $11,000.

9. Page 137, table 33: A–47 allocation of construction costs.—Pollution abatement is carried as $300 annual benefits, $300 net annual benefits, and $8,900 as justifiable investment.

10. Page 138, table 34: A–47 benefit-cost analysis.—$300 is shown as annual direct and total benefit for pollution abatement.

11. Page 140, table 35: A–47 comparison of analyses.—Under "Allocation of costs" pollution abatement is shown as zero cost.

It is noted that a proposed recreational site, consisting of 50 acres on the east shore just upstream from the dam, is recommended for development. The facilities proposed will include a short access road, parking area, boat ramp, well, toilet, picnic tables, and fire grates. Detailed construction plans of the water supply and waste disposal facilities should be reviewed and approved by the appropriate agency concerned with the sanitation features of these facilities.

Comments pertaining to insect vectors and pests, prepared by the communicable disease center, are attached.

The opportunity to review this report is appreciated.

Sincerely yours,

(Signed) M. D. Hollis,
Chief Sanitary Engineering Officer, PHS,
Department of Health, Education, and Welfare.

PRELIMINARY EVALUATION REPORT ON VECTOR PROBLEMS RELATED TO THE BUREAU OF RECLAMATION PROPOSED AINSWORTH UNIT, NEBRASKA MISSOURI RIVER BASIN PROJECT

VECTOR-BORNE DISEASE AND PEST PROBLEMS

Encephalitis is the vector-borne disease of most concern in the area. During the period 1940–53, the United States Department of Agriculture, Animal Disease and Parasite Research Branch, Agricultural Research Branch, reported equine encephalitis cases in the area of the proposed Ainsworth unit in 1942, 1944, 1945,

1947, 1948, 1950, and 1953. These records show that encephalitis virus is active in the project area, and that future epidemics may occur among humans and horses. Malaria has not been a problem in this area.

Culex tarsalis, the encephalitis mosquito, is reported to be extremely prevalent in the area. This species breeds in a variety of habitats. Temoprary ground pools resulting from seepage and surplus water from irrigation are especially favorable breeding places.

In addition to *Culex tarsalis*, at least 16 other species of mosquitoes are known to occur in the area of the proposed project. The more important of these include *Aedes dorsalis, Aedes migromaculis, Aedes Vexans*, and *Culiseta inornata*, The *Aedes* species are highly important pests of man and livestock; *Culiseta inornata* attack man only occasionally but they readily attack domesticated animals. All of these mosquitoes are known to be capable of transmitting encephalitis viruses, and all have been found naturally infected with one or more strains of encephalitis virus.

ANTICIPATED EFFECTS OF THE PROJECT ON VECTOR PROBLEMS

No significant mosquito production would be expected where the reservoir has a steep shoreline, or where the water level recedes from the vegetated shoreline during the summer. Production of mosquitoes may occur if shallow areas dvelop in the upper reaches of the reservoir.

Mosquito production would not be expected to result from the canal systems unless seepage develops, in which case extensive mosquito breeding may occur.

In general, it is anticipated that the development of additional irrigated lands would result in increased mosquito production unless adequate preventive measures are provided in the construction, operation, and maintenance of the project. Drainage facilities which the Bureau of Reclamation plans to provide for the project would, in many cases, be beneficial to mosquito prevention; however, the plan to terminate project drains in depressional areas, and to utilize spreader ditches for dissipation of waste water by evaporation and percolation may result in favorable mosquito producing situations. Likewise, the plan to utilize county road ditches for drainage purposes, and to terminate project drains in diked-off natural draws, may result in favorable mosquito-producing situations.

RECOMMENDATIONS

In order to prevent or minimize mosquito problems, it is recommended that the following basic principles be adhered to in the development of more detailed plans for the project. The following principles apply to problem areas within 1½ miles of urban population centers, rural population groups, or recreational areas frequented by significant numbers of persons during the mosquito breeding season.

Reservoirs

1. Vegetation within zone of fluctuation, in potential mosquito breeding areas:
   (*a*) Removal of all trees and brush prior to impoundment;
   (*b*) Removal of secondary vegetative growth as necessary after impoundment.
2. Flat, shallow areas which will be invaded by aquatic and other vegetation:
   (*a*) Manipulation of water levels to eliminate or minimize the intersection of vegetation with the water surface during the season of mosquito production; or
   (*b*) Shoreline deepening or filling to preclude shallow water areas and to discourage vegetative growth.
3. Borrow areas:
   (*a*) If possible, locate borrow areas where they will be permanently inundated.
   (*b*) Borrow areas located outside the reservoir basin or in the zone of fluctuation should be self-draining.
4. Natural depressions within zone of fluctuation:
   (*a*) Provide drains to insure complete drainage or fluctuation of water levels with main reservoir; or
   (*b*) Fill where practicable.
5. Marginal swampy areas or marshes:
   (*a*) Provide drainage.
6. Seepage areas below dams or back of dikes:
   (*a*) Provide drainage to natural channels.

Project Distribution Systems

1. Canals and laterals:
   (*a*) Maintain grade and provide drainage facilities for the removal of residual water from canals, laterals, and their appurtenances when they are not in use.
   (*b*) Place underdrains, culverts, inlets, etc., on grade to complete drainage.
   (*c*) Install drains on the high side of the canal where necessary to prevent ponding of surface runoff.
   (*d*) Provide lining where necessary to prevent seepage which would result in condition favorable for mosquito production.

Main drainage system

1. Drainage construction:
   (*a*) Provide adequate drains for removal of all excess natural surface runoff and irrigation water.
   (*b*) Make provision for additional construction of drains and seepage control work on canals during the postconstruction period to meet actual needs as they develop.
2. Drainage maintenance:
   (*a*) Provide for the removal of vegetation, debris, and floatage and other necessary maintenance.

Farm irrigation systems

The proposed project does not provide for construction on the farms; however, the water users should be encouraged to employ the following basic principles in order to minimize and prevent mosquito production.

1. Selection and preparation of lands to be irrigated:
   (*a*) Avoid the use of lands unsuitable for irrigation.
   (*b*) Proper grading and leveling of all irrigated land to prevent ponding on fields and excessive runoff.
   (*c*) Employ proper field layouts and irrigation methods to minimize deep percolation which results in seeps and waterlogging of downslope lands.
2. Drainage systems:
   (*a*) Provide adequate drains for the removal and disposal of irrigation waste water and natural surface runoff.
   (*b*) Maintain drains so as to insure free flows.
3. Irrigation and drainage practices:
   (*a*) Employ proper irrigation methods and water management practices to prevent excessive seepage and waterlogging.
   (*b*) Avoid application of water in excess of crop requirements.

In cases where the mosquito preventive measures outlined above cannot be utilized, full provisions should be made for chemical or other supplemental measures to provide adequate mosquito control.

LETTER FROM FEDERAL POWER COMMISSION

FEDERAL POWER COMMISSION,
Washington 25, September 1, 1955.

Subject: Ainsworth unit, Nebraska, Missouri River Basin project.

Hon. DOUGLAS MCKAY,
Secretary of the Interior, Washington 25, D. C.

DEAR MR. SECRETARY: This is in response to the Commissioner of Reclamation's letter of June 13, 1955, inviting comments by the Federal Power Commission on your Department's report on the Ainsworth unit, Nebraska, Missouri River Basin project. Transmitted with that letter were copies of the Acting Commissioner of Reclamation's report of March 16, 1955, approved by the Acting Secretary of the Interior on June 10, 1955, the regional director's report of March 1, 1955, and substantiating material. The transmittal of these comments is in accordance with the established procedures of the Interagency Committee on Water Resources.

The report recommends a plan to provide an irrigation water supply for 33,960 acres of irrigable land near the town of Ainsworth in north central Nebraska. The plan consists of the Merritt Dam and Reservoir, the Ainsworth Canal, a system of irrigation laterals, drainage works, and three small pumping

plants. The capital cost of the plan is estimated in the report at $25,934,000 based on July 1954 prices. Of this amount, $25,433,100 is allocated to irrigation, $486,100 to fish and wildlife, and $14,800 to recreation. On the basis of an evaluation period of 100 years, the ratio of total annual benefits to annual costs is estimated in the report at 2.16 to 1. Utilizing only direct irrigation benefits the ratio would be 0.87 to 1.

The Merritt Reservoir project as recommended for construction in the report under consideration would consist of a rolled earth-fill dam on the Snake River, approximately 14 river-miles upstream from the confluence of the Snake and Niobrara Rivers, a morning-glory type spillway structure, outlet works, and a reservoir of 68,600 acre-feet capacity, of which 67,500 acre-feet would be used for irrigation and 1,000 acre-feet for dead storage. No structures, such as penstocks, are included for the future development of hydroelectric power.

The Commission staff has reviewed your Department's report on the Ainsworths unit and has studied the possibilities of developing hydroelectric power at the Merritt Reservoir project. The staff advises that because of the seasonal flows which would be released from the Merritt Reservoir for irrigation purposes the power that could be developed would be small in amount. Installed capacity, in the order of 1,000 kilowatts, would not be dependable, and the revenue that might be received from the sale of energy would be far from meeting the cost of the power facilities.

The Commission appreciates the opportunity of reviewing and commenting on the report of your Department.

Sincerely yours,

JEROME K. KUYKENDALL,
Chairman.

LETTER FROM DEPARTMENT OF LABOR

UNITED STATES DEPARTMENT OF LABOR,
OFFICE OF THE ASSISTANT SECRETARY,
Washington, September 7, 1955.

Mr. W. A. DEXHEIMER,
Commissioner, Bureau of Reclamation,
Department of the Interior, Washington 25, D. C.

DEAR MR. DEXHEIMER: This is in further reply to your letter of June 13, 1955, to Secretary Mitchell transmitting the proposed report on the Ainsworth unit, Nebraska-Missouri River Basin project.

Our analysis of the report indicates that the project, if undertaken, will undoubtedly increase employment by several hundred in trade and service activities, and in agriculture itself. This should reverse the downward trend of recent years, when the area lost a food-processing plant, a railroad division point, and had a sizable decline in tourist trade.

In view of the above considerations, the Department of Labor is pleased to endorse the Ainsworth unit project report. This recomendation presupposes, of course, that the proposed project is economically sound and feasible, and that it meets the standards set forth in the pertinent laws.

Thank you for the opportunity to review this report.

Sincerely yours,

(Signed) LEO R. WERTS,
Deputy Assistant Secretary of Labor.

LETTER FROM GOVERNOR OF COLORADO

STATE OF COLORADO,
EXECUTIVE CHAMBERS,
Denver, July 5, 1955.

Hon. DOUGLAS MCKAY,
Secretary of the Interior,
Washington, D. C.

DEAR MR. SECRETARY: On June 30, the Colorado Water Conservation Board received from Mr. W. A. Dexheimer, Commissioner of the Bureau of Reclamation, copies of the proposed report of the Department of the Interior on the Ainsworth unit, Nebraska.

Colorado makes the following comments in accordance with the provisions of section 1c of the Flood Control Act of December 22, 1944:

(*a*) It is noted that the unit consists of the Merritt Dam and Reservoir, the Ainsworth Canal, several small pumping plants, and laterals and drains to service 33,960 acres of irrigable land which lie within 50 miles of the northern border of the State of Nebraska and about the middle of the State in the east-west direction.

(*b*) The Merritt Reservoir is located on the Snake River—a stream which rises in Nebraska, has its entire drainage area in that State, and is a tributary of the Niobrara River.

(*c*) The total reimbursable construction costs chargeable to irrigation amount to $25,433,100. If 100 percent of payment capacity is utilized, the land would be required to retire $7,977,000, or approximately 31 percent of the entire construction costs, the remainder to be retired by assistance from the Missouri Basin project.

(*d*) It is noted in paragraph 55, page 13 of the report that "Payment analysis of the Missouri River Basin project as a whole discloses that there are sufficient basinwide net revenues to pay all reimbursable costs, including those of the Ainsworth unit, in a period of time well within the useful life of the works."

Inasmuch as this project, including its watershed, is entirely within the State of Nebraska and nowise affects the water interests of Colorado, the State of Colorado feels that no further comment is necessary.

Sincerely yours,

EDWIN C. JOHNSON,
Governor of Colorado, Chairman, Colorado Water Conservation Board.
IVAN C. CRAWFORD,
Director, Colorado Water Conservation Board.

LETTER FROM GOVERNOR OF KANSAS

THE STATE OF KANSAS,
Topeka, July 29, 1955.

Mr. W. A. DEXHEIMER,
Commissioner, United States Bureau of Reclamation,
Washington 25, D. C.

DEAR MR. DEXHEIMER: Reference is made to your letter of June 13, 1955, addressed to Mr. Robert Smrha, chief engineer, division of water resources, transmitting for review in accordance with the 1944 Flood Control Act copies of your report on the Ainsworth unit, Nebraska, of the Missouri River Basin project.

I am advised that the proposed project is in the Niobrara Basin in Nebraska. It would consist of works for development of the water supply of Snake River, a major tributary of the Niobrara, for use in the irrigation of 33,960 acres of land. The project would utilize approximately a half of the average annual water supply of the stream.

It is concluded that the proposed development would not affect adversely any interests of the State of Kansas and therefore we have no objection to its construction.

Your courtesy in affording us the opportunity to review the report is appreciated.

Sincerely yours,

FRED HALL, *Governor.*

LETTER FROM GOVERNOR OF MONTANA

STATE OF MONTANA,
STATE ENGINEER,
Helena, Mont., July 5, 1955.

Hon. DOUGLAS MCKAY,
Secretary of the Interior,
Interior Building, Washington, D. C.

DEAR SIR: Receipt is hereby acknowledged of a copy of the engineering report on the proposed Ainsworth unit, Nebraska, a Missouri River Basin project, designated as "Part 1, Revised, March 1955."

This letter is being written at the request of Mr. J. Hugo Aronson, Governor of the State of Montana, in compliance with the provisions of section 1 (c) of the Flood Control Act of December 22, 1944.

A thorough study has been made of the above-mentioned engineering report which brought us to the conclusion that Montana has no objections whatever to the construction of the proposed project. The Snake River, which is the source of water supply, "originates and terminates entirely within the State of Nebraska, no upstream interstate or compact complications are foreseeable."

The project appears to be feasible; the benefit-cost ratio is favorable; the project is desired by a majority of the local residents and the source of water supply interferes with no upper State in the Missouri River Basin; therefore, Montana endorses the proposed project.

With a rapidly growing population, such as we are experiencing in the United States, we should focus our attention to the future development of land and water resources, to the end that this country may never be short of sufficient irrigated areas that will be needed for the production of food and fiber to continue our present agricultural economy. With this thought in mind, every feasible irrigation project in this country that can be built without interfering with property and rights of others, should have the sincere attention of the Congress.

Very truly yours,

FRED E. BUCK, *State Engineer.*

LETTER FROM GOVERNOR OF NEBRASKA

STATE OF NEBRASKA,
EXECUTIVE OFFICE,
Lincoln, July 1, 1955.

Hon. DOUGLAS MCKAY,
Secretary of Interior,
Department of Interior, Washington 25, D. C.

DEAR SECRETARY MCKAY: On June 17, 1955, I received the copy of your report on Ainsworth unit, Nebraska, dated March 1955, which your office transmitted to me on June 14, for my official comments as provided by section 1 (c) of the Flood Control Act of 1944. I have had the report reviewed by engineers of the department of roads and irrigation. They advise me that the report is essentially the same as the preliminary draft of the report dated December 1954, upon which former Gov. Robert B. Crosby submitted his favorable informal comments to the director, region 7, United States Bureau of Reclamation by letter dated January 4, 1955.

It has been my policy that where hearings and investigations have been made and decisions given by my predecessor, that I concur in these views and recommendations. I am attaching hereto a copy of Governor Crosby's letter of January 4, 1955, which, together with this letter, constitute official recommendation.

I also recommend that particular attention be given to any who may be damaged by the construction of the Ainsworth Canal and that they be adequately compensated.

Sincerely yours,

VICTOR E. ANDERSON,
Governor of Nebraska.

LETTER FROM GOVERNOR OF NEBRASKA

STATE OF NEBRASKA,
EXECUTIVE OFFICE,
Lincoln, January 4, 1955.

In re 7-730—Ainsworth unit.

Mr. R. J. WALTER, Jr.,
Director, United States Bureau of Reclamation,
Region 7, Building 46, Denver Federal Center,
Denver, Colo.

DEAR MR. WALTER: This letter constitutes my informal review comments on your preliminary draft report on the Ainsworth unit which you requested in your letter of November 29, 1954.

Copies of the report which were furnished with your November 29 letter were furnished to officials of the Ainsworth Irrigation District, the Niobrara River Development Association, and the Sandhills Conservation Association. The heads of the several State departments whose responsibilities lie in the

fields of soil and water resources, and the attorney general, were furnished copies of the report also. They have examined the report and have given me the benefit of their views.

Because of the objections to the Ainsworth unit by the Sandhills Conservation Association 2 years ago when the Niobrara Basin report was released and the continued objections when the Niobrara units were before the Congress for authorization in April 1954, I invited representatives of that association and representatives of the Ainsworth Irrigation District, proponents of the project, to a hearing in my office on December 29, 1954, in order that I might have their reactions to the new report.

As you know, the Sandhills Conservation Association is composed of ranchers through whose ranches the proposed Ainsworth Canal would run and ranchers in adjacent areas who feel that their interest might be adversely affected by the project. They continue to oppose the proposal for the principal reasons that (1) seepage from the Merritt Reservoir may damage natural hay and grasslands in adjacent valleys, (2) that seepage and/or drainage from the canal may reduce the productivity of their meadows and pastures along the canal, (3) that the values of their ranches will be greatly reduced by the inconveniences and difficulties incidental to their being divided by the proposed canal, (4) that losses of cattle will result from their drifting into the canal during blizzards which occur frequently in the area, (5) that the Merritt Reservoir will leak to the extent that it will not store enough water to supply the irrigation requirements of the project, (6) that the project is not economically feasible, pointing out that the original estimated construction costs allocated to irrigation amount to $763.66 per acre, and (7) that the proposed use of water from the Snake River in the Niobrara River Valley below the confluence of the two streams is in violation of the Nebraska law which prohibits the taking of water from one watershed to another.

Some of the objections appear to be met satisfactorily in the new report. The lining of 44 miles of the canal with concrete should eliminate damage from seepage or drainage throughout that part. There still seems to be a question as to what may happen to lands along the remaining 8 or 9 miles to be lined with gravel. The fencing of the canal, as proposed, should generally prevent livestock from getting into the canal except perhaps during blizzards, when fences are often ineffective. The owners of land along the canal will suffer certain damages which cannot be avoided such as the loss of use of the canal right-of-way and the inconvenience of having to cross the canal in the operation of their ranches. Such damages are compensable under Nebraska law.

There are conflicting expert opinions as to the ability of the proposed Merritt Reservoir to hold water and the seepage damages that may result from operation of the reservoir. Your conclusion that seepage losses from the reservoir will be within tolerable limits seems to be justified.

A comparison of the costs and benefits of the proposed Ainsworth unit with those of the Frenchman-Cambridge and Bostwick divisions in Nebraska and units of other Bureau projects in the Missouri River Basin, indicates that they were arrived at by similar procedures and that the economic feasibility of the Ainsworth unit compares favorably with that of the others.

The question of the legality of taking water from a tributary stream for use in the valley of the main stem of a river basin entirely within the State of Nebraska has not been ultimately decided by the Supreme Court of Nebraska. However, I refer you to the Osterman case which prohibits the taking of water from the Platte River or its tributaries for use beyond the southern watershed of that stream.

Under the present proposed Ainsworth unit it would not seem to appear that there is any transwatershed diversion involved. The water which is used from the Snake River is used in the same basin, and after being so utilized is returned to its original drainage basin—the Niobrara.

I do not feel that the use of the water as proposed for the Ainsworth unit would be in violation of the laws of the State of Nebraska.

The landowners within the proposed Ainsworth unit have organized themselves into an irrigation district by a favorable vote of more than 80 percent for the purpose of entering into a contract with the United States for the repayment of the reimbursable costs of the project chargeable to irrigation.

Although I realize that some damage will result to the ranchers of the sandhills area by the development of the project and I appreciate the sincerity with which the ranchers are opposing it, I believe that the benefits which will accrue to the region and the State will more than offset any detrimental effects that may result.

I look favorably upon the development of the Ainsworth unit with the conviction that you will proceed with it only when you are certain that all facilities will be constructed so as to avoid adversely affecting the productivity of lands, other than rights-of-way, and that all persons who may be injured in any way through the construction and operation of the project shall be adequately compensated and protected.

Sincerely yours,

ROBERT B. CROSBY.

LETTER FROM GOVERNOR OF SOUTH DAKOTA

PIERRE, S. DAK., *July 1, 1955.*

W. A. DEXHEIMER,
Commissioner, Bureau of Reclamation,
United States Department of Interior,
Washington 25, D. C.

DEAR COMMISSIONER DEXHEIMER: In further reference to your letter of June 13 regarding the proposed report of the Department of the Interior on the Ainsworth unit, Nebraska, I can now report the following:

The State of South Dakota offers no objection to the construction of the Ainsworth unit inasmuch as its construction is primarily of interest only to the State of Nebraska. However, our State does specifically place on the record a reservation, which it has consistently made at each state of the proceedings, that we retain the rights to all the water which we may beneficially utilize in the future, in the Keya Paha and Ponca streams within the boundaries of South Dakota.

Thanks for your cooperation, and best regards.

Sincerely,

JOE FOSS, *Governor.*

LETTER FROM GOVERNOR OF WYOMING

WYOMING EXECUTIVE DEPARTMENT,
Cheyenne, July 5, 1955.

Hon. DOUGLAS MCKAY,
Secretary of the Interior,
Washington, D. C.

DEAR DOUG: It seems that in the shuffle the Governor of Wyoming neglected to acquaint you with his approval of the feasibility report which was approved by your office on the Ainsworth, Nebr.; irrigation project, referred to in H. R. 5479.

I am sincerely hopeful Congress can act upon this matter during the present session.

Please forgive me for my delay in acknowledging the feasibility report and indicating my approval.

With warm personal regards,

Sincerely yours,

MILWARD L. SIMPSON, *Governor.*

LETTER FROM STATE ENGINEER OF WYOMING

STATE OF WYOMING,
STATE ENGINEER'S OFFICE,
Cheyenne, July 15, 1955.

Mr. W. A. DEXHEIMER,
Commissioner, United States Department of the Interior,
Bureau of Reclamation, Washington 25, D. C.:

Agreeable to the request contained in your letter of June 13, 1955, I have reviewed your report on the Ainsworth unit, Nebraska, of the Missouri River Basin project.

With a benefit-cost ratio of 2:16 to 1 as indicated by the report, it appears to be a worthwhile practical project.

I have no adverse comments to offer in behalf of the State of Wyoming.

Very truly yours,

L. C. BISHOF, *State Engineer.*

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington D. C., August 22, 1955.

Hon. JAMES E. MURRAY,
Chairman, Committee on Interior and Insular Affairs,
United States Senate, Washington, D. C.

MY DEAR MR. CHAIRMAN: This will acknowledge receipt of your letter of June 27, 1955, requesting the views of the Bureau of the Budget on S. 2206, a bill to provide for the construction and operation by the Secretary of the Interior of the Ainsworth unit of the Missouri River Basin project.

The final report of the Secretary of the Interior with the views of the interested Federal agencies and the affected States on the Ainsworth project have not been received in the Bureau of the Budget. Upon receipt of the report, our review to determine its relationship to the program of the President will be completed at the earliest practicable date consistent with careful consideration of the engineering findings and an examination of the budgetary aspects. We shall then be in a position to comment on S. 2206.

Accordingly, it is recommended that the committee defer action on this bill until a project report has been submitted under the established procedures.

Sincerely yours,

PERCY RAPPAPORT,
Assistant Director.

(Whereupon, at 5:21 p. m., the hearing was closed.)

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